THE FARMERS' REGISTER.

VOL. X. MARCH 31, 1842. No. 3.

EDMUND RUFFIN, EDITOR AND PROPRIETOR.

SANDY POINT ESTATE.—NO. V.

To the Editor of the Farmers' Register.

Sandy Point, 18*th February*, 1842.

The following communication will present a general summary of the farming operations, on this estate for the year 1841, (exclusive of those which may have been noted in former numbers,) and would have been forwarded to you ere now, had not a protracted indisposition and other causes induced delay.

The 1st of January, 1841, found us with a very considerable proportion of the corn crop of 1840 yet out in the field, being prevented from hauling off the land sown in wheat, by the continued wet weather, and consequent soft state of the ground; nor was all got in till the 15th of February, when the last loads were got up, all in good and safe condition.

Fallowing operations for the corn crop of this year (1841) were fully two-thirds executed prior to the 15th of December preceding, and it proved fortunate that we were so far in advance, for the unprecedented wet winter effectually put a stop to all such operations. Nor were we again able to resume fallowing earlier than the 22d of February. The general condition of the ground then being wet and heavy, we were only enabled to plough on drier portions of corn ground, and that intended for oats.

At intervals, during the last week of February and 1st day of March, 24 bushels of clover seed were sown amongst wheat; the ground in good condition for receiving the seed, which was sown without receiving either a subsequent harrowing or rolling, and has generally succeeded well. One gallon of seed was sown per acre, and from the apparent abundance of plants has proved to have been an abundant supply. Not more than 30 acres of the land thus sown in clover had been rendered calcareous by a preceding application of lime or marl. The larger proportion was sown on a neutral soil, a portion of which might be considered rich; but much the greater part of only medium quality as to fertility, and a few acres of a lighter soil, decidedly poor. On this latter the stand of plants, as was anticipated, is very sparse, on the other and larger portion of neutral soil, the general stand is pretty good, though greatly inferior to that sown on land of an exactly similar nature, and which had received the benefit of a dressing of either lime or marl, on which the plants are not only thickly set, but now present a luxuriant appearance.

Oat sowing was commenced on the 2d of March, but, in consequence of delays from frequent rains, was not completed until the 30th of the month. On corn ground of the preceding year there were sown 220 bushels, and 113 on a weed and clover fallow, intended for ploughing under at the proper season, as a preparatory green manuring for wheat. The result of this crop was extremely indifferent. Oats suffered from drought; straw was generally very short; and the grain was also indifferent—the whole being little short of an entire failure. The seed originally was not pure, being a mixture of the common and ruffle oats, not so from choice, but from carelessness in storing past seed, or by some other means allowing them to become mixed. The sowing of them in this mixed condition, for two or more years, resulted in both varieties becoming degenerate and unprofitable, so much so as to induce an entire change of seed, and that to the common in preference to the ruffle oat.

Fallowing of corn land was completed on the 2d of April, and even at that late season with difficulty; a wetter, or more harassing season for general farm operations I have never encountered. Planting of corn was begun on the drier and lighter portions of ground on the 27th of April, and, including some delays from rains, was finished on the fourth of May. The extent of ground planted, as stated in a former communication, being about 603 acres. The whole had been carefully fallowed by three-horse ploughs. The larger proportion of the several fields being of good soil, the growth of clover and weeds was generally heavy. About 130 acres of the whole had received a dressing of lime or marl, the greater proportion of the latter immediately before planting. A small portion had been limed some years previous. After fallowing, the whole was well and finely harrowed, and where judged necessary was re-fallowed, and again harrowed. All being thus considered in good condition for receivng the seed, so far as being in good tilth could be beneficial. Where not liable to be injured by surface or other water, the corn was planted in checks, and cultivated in both ways; but where liable to become wet, particularly in stiffer bottoms, or sufficiently sloping to be washed by heavy rains, drill planting was adopted. Markers previously passed over the fields, laying off or marking the rows; the seed furrows were then opened by one-horse mould-board ploughs, the planters following after at a convenient distance, dropping the corn and slightly covering it with the foot, and heavy harrows following after and finishing the operation. By this mode, in good weather and free from interruption, our average planting per day is equal to 150 acres, and the fields are left in neat and good condition. The harrowing of the land after corn planting I consider a very desirable object; the surface of the ground is left in the cleanest and best possible condition, and if properly executed is little inferior to a course of ploughing; and it also proves the best defence against the attacks of crows that I have yet known. A small portion of bottom land was left without the harrow passing over after planting. On this spot the crows picked up nearly every hill; but where harrowed very few hills were missing from this cause. With the exception of some of the stiffer bottoms of the best portion of the fields the general crop started well. On about 125 acres the cut-worm unfortunately soon commenced its ravages, and on which it was with the greatest possible difficulty that corn could at all be got to stand. Much of this

land was, subsequent to its original and also first replanting, twice ploughed up entirely, and replanted; and then recourse had to be had to setting out plants from other portions of the fields. After this pest had in some measure desisted from its inroads, the bud-worm commenced operations, and likewise did no little damage; so much so that on the 22d of July, when the culture of the corn crop terminated, these portions of the fields did not afford the prospect of yielding any crop. Rains occurring early in August did much to give it a start, when it improved much more rapidly than I could have anticipated. The results, however, though better than expected, were little if any over one third of a crop, and that from the richest portions of the fields, with this exception, a heavy one. It must be admitted, it is considered that the general return will prove a fair average crop, but which cannot as yet be accurately ascertained. The course of culture pursued in this crop of corn was first throwing a furrow from each side of the corn with one-horse mould-board ploughs, and breaking the balks with trowel hoes. The second and cross ploughing was altogether with trowel hoes, the small, or as it is here designated the X trowel hoes, going next to the corn. Weeding hoes following after this ploughing as speedily as possible. Corn, with the exception of ditch banks and rich headlands, thinned to one stalk to a hill. The ploughs having finished the second ploughing, one-horse mould-board ploughs again run on each side of the corn, throwing the furrow-slice to the plants, the trowel hoes again in the balks. This course also finished, the whole is again gone over with the trowel hoes—seldom completed before wheat harvest interrupts; after which all grassy and foul spots receive another stirring with trowel hoes, followed also by the weeding hoes. Thus the larger proportion of the crop received five ploughings, performed as carefully as possible; and when laid by, the fields were in clean and good condition.

On the 5th of June one half of the barrel of poudrette which you kindly presented for experiment was applied immediately after the first hoeing (received too late for an earlier application) to a portion of the corn-field, where no marl or lime had been applied, selecting each alternate two rows of fifty hills each. A portion of these rows had a quarter of a pint of poudrette applied to each hill, and another portion had half a pint applied in a similar manner; and on June 15th, the remaining half of the barrel was applied on a portion of the field recently marled, selecting each alternate two rows as above, giving to each hill half a pint; and after careful observation throughout the season, I could not discover that any benefit resulted from the application in either case. Was the application properly made?

Very little of the blade fodder was pulled from this crop of corn, probably not more than 12,000 lbs., having been able, at the proper season, to cure a considerable portion of good clover hay, which, with the aid of cut and salted shucks for our horses and mules during the long winter nights, and on which they do well, will be sufficient for our consumption. Top fodder was cut from off little more than one third of the crop at a season sufficiently advanced not seriously to injure the corn.

On the 14th and 15th of June, 68 bushels of black-eyed peas were sown on a principally weed fallow; covering ploughed under of good growth generally, and in some places heavy. These were sown broadcast, and covered by one-horse ploughs, intended as a preparatory green manuring for wheat. The subsequent growth of peas proved to be good, causing considerable difficulty in ploughing them under. The results of this mode of manuring on the now growing wheat crop are looked forward to with considerable interest. On the 22d and some following days of July, a crop of oats on adjoining land was also ploughed under as a preparatory manuring for wheat. Crop of oats, unless on headlands of ditch margins, very indifferent; the second or volunteer growth, however, proved excellent, and was again ploughed under at the time of sowing the wheat. The soil on which both oats and peas were thus sown and treated was uniform; and to a portion of both, side by side, marl was applied in the month of September, a favorable opportunity will thus be presented of testing the comparative value of oats and peas as a green manuring.

Fallowing clover lay for wheat was begun on the 25th of July, and finished on the 20th of September, amounting in all, pea and oat fallow inclusive, to as nearly as can be judged not less than 525 acres. The whole performed with three-horse ploughs. On some portions of the fields thus fallowed occasional difficulties were experienced from the ground becoming hard and dry; but not to any injurious extent. The whole having been performed generally well, and being carefully levelled by heavy harrows, was left in good condition for receiving the seed; sowing of which was commenced on fallowed land on the 1st of October. Rain occurred on the evening of the 2d, and but slight progress was made until the 6th, when weather and ground both became more favorable for this important operation. Another delay occurred from the same cause from the 10th to the 14th, from which time the weather continued remarkably favorable for wheat sowing, until its completion on the 8th of November. On fallowed land there was sown 918$\frac{3}{4}$ bushels of red or purple straw wheat, and on corn land 68 bushels of purple straw, 553$\frac{1}{4}$ bushels of white Turkey, and 5 bushels of rock wheat, the whole being equal to 1545 bushels. All of the wheat was covered with two-horse mould-board ploughs, both on fallow and corn land. The heavy growth of grass on much of the latter rendered ploughing difficult and tedious. Heavy harrows followed once or oftener, and these again by hand-hoes. Water furrows were carefully opened, and the whole left in as good condition for the wheat as could be obtained. The time occupied in sowing and covering was equal to 26 days, or an average per day of 59$\frac{3}{26}$ bushels. The drought which prevailed until the middle of November caused the late sown wheat to vegetate slowly in many places; and had also an evident unfavorable tendency on the earliest sown and most forward wheat, causing much of it to assume a yellow or rather red appearance. So far as could be observed there was no fall attack of the Hessian fly. Up to this date, the unusually mild weather which has prevailed during this winter has caused young wheat to be generally very forward, particularly on fallowed land. I have never

before seen it look better in the month of April; and from this cause I greatly fear that a succeeding season of severe frost might have on it a most injurious if not ruinous tendency. Wheat sown on corn land is much less forward, generally however presenting an appearance not unpromising.

Of putrescent manures there were during the season, chiefly in the early spring months, 2599 loads hauled out: 245 loads of the finest or most rotted manure were applied on corn land in the spring; the residue mostly cow-pen and stable manure, only partially decomposed, was applied as a top-dressing on clover intended for wheat fallow. Every season's practice of this mode of application strengthens my opinion of its being the best and most profitable. The average quantity applied to an acre was 18 loads; each load such as is usually hauled out by six oxen on large carts.

Of calcareous manures there were 41,959 bushels of marl applied during the year. One-third of that quantity was applied in the spring previous to planting corn; the other two-thirds at intervals during the summer and fall months, on clover, pea and oat fallows, intended for wheat; the average quantity per acre being 170 bushels of marl containing 60 per cent. of lime. In all about 246 acres have been marled during the year, in addition to which 350 hogsheads of shells were burned in the spring and applied to land afterwards planted in corn, at the rate of from 90 to 120 bushels of lime per acre. A 20-acre lot had one half of it a dressing of lime at the rate of 120 bushels per acre, and the other half a dressing of marl at the rate of 200 bushels per acre, of same quality as above stated. A single corn row formed the dividing line between the two applications. The soil was of uniform texture and quality. The progress of the growth of the corn on both was narrowly watched during the season; little if any difference could be discovered. The crop on both was good, and if any difference did exist, I would say that it was in favor of the marl. Other individuals who had seen the crop expressed the same opinion. The entire 20 acres on which these applications were made are now in wheat, which crop may perhaps more directly test the relative value of the two applications.

In former communications I have noticed the happy effects which had regularly attended each application of lime or marl on this estate, and will now only observe farther, that time and more extensive applications strengthen the favorable opinions heretofore expressed.

The end of the year again found us with a considerable portion of corn still exposed in the fields sown in wheat. Not less than 525 to 550 acres of land have been fallowed towards crops of 1842, of chiefly clover and weed lay; and altogether operations are generally in a favorable state of forwardness, of which and their results more may be said in a subsequent communication.

A. Nicol.

THE CUT WORM.

From the American Farmer.

Mr. Editor—This is the popular name of a grub or worm, very destructive to corn, cabbage plants, potatoes, clover, &c. I have in vain searched through all the volumes of the "American Farmer," and other agricultural journals for a history of this insect. It has by some been intimated that a *black bug*, about an inch in length, of a quick and lively motion, was the parent of the cut-worm; but nothing like a rational history of its changes and habits has ever been given, so far as I have been able to ascertain. A very slight knowledge of entomology would be sufficient to convince any one that a "*black bug*" would not be the parent of a larva of the caterpillar kind, such as is the cut-worm. We are then to seek among the genus papilla or phalæna for its parent.

It is somewhat remarkable that the history of an insect so destructive to the principal crop of the farmer as is the cut-worm should be so shrouded in darkness or veiled in obscurity. Having suffered myself, and having long witnessed the sufferings of others, by the ravages of this destructive insect, I have for some years past made its history a subject of study and observation; and if I shall be so fortunate as to cast such light upon it as shall be useful to the agricultural community, for which I have a high regard, I shall consider myself amply rewarded.

In the year 1838, I had a short conversation with E. P. Roberts, esq., then editor of the "Farmer and Gardener," on this subject, and informed him that I was prosecuting some inquiries on the history of the cut-worm; at his request I promised him, when they were completed, to communicate them for that journal. Until last year they were not satisfactorily accomplished. On the 20th of July, 1841, I took from the root of a cabbage plant a full grown cut-worm, and put it into a glass jar with a little fresh earth, so that I might observe the changes it underwent. On the 30th it had become a chrysalis of a brown mahogany color, and on the 15th of August it underwent the last metamorphosis and become a moth, of a grayish hue, and of about one inch in length. These operations and changes were carefully noted in my farming and gardening diary, from which the above extract is made.

Being then possessed of the parent moth, I was enabled to fix on the order, genus and species of the insect; which are the following:

Phalæna—*moth*, of the order lepidoptera; flight nocturnal of the assortment noctuæ, wings incumbent, antennæ setaceous, of a grayish color, clouded and variegated, about one inch in length. It changes to a chrysalis in July, and the moth appears in August. It lays concealed in the shade of green herbage in the day time, devotes a few nights to love and sexual embraces, deposites its ova on the stems of green and growing plants near the roots; when, having performed these offices appointed by nature for the propagation of its progeny—it dies. The eggs hatch in a few days, the young brood commence their ravages on the green clover and attain about half their growth the same season, and lie buried at the root in a torpid state during winter. As the warmth of spring reanimates them, they become ready for

the corn crop, or the first green-plant that is presented to their gluttonous appetite.

It is entirely gratuitous to say that fall or winter ploughing will destroy them. I have found a cut-worm, nearly full grown, early in March, at the root of ripple grass (plantago.) After the extract, which I shall presently make from good authority, it is to be hoped that the destruction of the cut-worm will never again be mentioned as an apology for the pernicious practice of fall or winter ploughing—a practice tending equally to impoverish the soil with that of leaving it exposed, naked, to the scorching rays of a vertical sun.

In the 3d vol. of the old American Farmer, page 94, will be found the result of an experiment by Dabney Minor. He had a field of 110 acres of heavy clover stubble, 95 of which he had ploughed with two yoke of oxen to a plough in the fall of 1820. Ten of the 15 he had listed the next spring. Five he left standing in clover. The whole field thus prepared, with the exception of the five acres in clover, was planted in corn about the middle of April. "The worms commenced their depredations with the coming up of the corn. A large portion of the corn on that part of the field ploughed in the fall has been destroyed, and the remainder so crippled as to render it doubtful whether it will recover. The corn in the ten acres of the balk land, together with the clover in the balks, has been destroyed root and branch, and the five acres of clover adjoining have shared the same fate. I have never seen an instance of so entire and complete destruction. I have on this day, May 22d, reploughed and replanted the whole piece, with however but little hope of succeeding in a crop from it, for the worms are as numerous as ever." After this, let no one advocate fall or winter ploughing—*to kill the cut-worm!*

The only method to prevent this scourge is to turn under the clover crop early in August, before the eggs are deposited; and if this were done the *second* year after the clover is sown, it would be the better method, as well for this purpose as to prevent the blue grass from getting too much ahead. The rotation of crops should be changed, so as to let corn follow the wheat crop.

A knowledge of the history and habits of insects is useful to the farmer, that he may be the better enabled to counteract their pernicious influence. Next to the Hessian fly, the cut-worm is the most destructive to the growing crops. When clover stands three years they must destroy more than half the crop of the third year; but as this does not come so immediately under his cognizance, it is overlooked by the farmer.

The flight of the cut-worm moths is nocturnal, and they are attracted by fire. By kindling fires, a few nights in August, in and about clover fields, great numbers may be thus destroyed; and it may be observed, that for every moth destroyed at that time we prevent the probable increase of some hundreds of their progeny.

Last fall I spread on a clover field, intended for corn next spring, about 20 bushels of slacked lime to the acre, in the full belief that it will destroy the cut-worm; if I should be disappointed in this expectation, it will not be labor lost, as the land will be improved by the lime sufficiently to pay the expense.

The corn crop is so important to the farmer that he should not spare any reasonable exertion to ensure a full one. Replanted corn never comes to much, and it is not only a loss of time but perplexing to have our crop thus mutilated.

The rotation that appears most likely to succeed is the following—wheat, corn, oats, wheat, clover, clover. This will bring two fields each in wheat, one in corn, one in oats, and two in clover. This would serve for the six-field system. For the five field the following: wheat, corn, wheat, clover, clover. Either, by letting the corn-crop follow wheat, will be found a sure protection from the cut-worm, without fall ploughing. It is the clover which serves as a harbor and nursery for the cut-worm, as well as other insects; and as before observed, it should not be permitted to remain longer than two years. W. L. HORTON.

Wood-Lawn, Feb. 16, 1842.

REMARKS AND INQUIRIES ON MANURES.

To the Editor of the Farmers' Register.

I have just read, in your January number, an elaborate "essay on the making, the preserving, and the applying of manures." This is evidently from the pen of a sensible writer; but to farmers, who like myself are interested in acquiring practical agricultural information, it is desirable to know how far the writer's theory has been sustained by his practice. For my own instruction, then, I beg leave respectfully to inquire of him as to portions of the system he recommends:—

First, what is the number of his horned cattle; what number of acres he annually manures by cow-penning, (commonly so called,) and whether an equal degree of fertility is imparted to the land by this mode as by manuring from the stables and farm-pen in the customary manner?

Second, as to hogs. Can farmers generally afford to keep them up in the way described by the writer, and do they thrive through our long, hot and dry summers in that state of confinement? What amount of labor is necessary to collect the materials for them to work up into manure, and what is the comparative value of that manure, mixed, as it must be, with such immense proportions of mud, dirt and litter? What will a farmer's pork cost him, raised in this way, out of the immediate vicinity of a market?

In my county, reapers and mowers are worth one dollar per day. At this rate what will it cost, per acre, to cut down the weeds, &c., for litter, as recommended; and is not this practice injurious to the land from which they are taken?

The writer of the essay is, I take it for granted, an amateur farmer, and consequently he will not be offended by these questions, which have been suggested to my mind on reading it. They are put in a spirit of perfect respect for the talents and motives of the author.

Feb. 21, 1842. A YOUNG FARMER.

TO KILL LICE ON COWS, HORSES OR HOGS.

From the Central New York Farmer.

Take the water in which potatoes have been boiled, rub it all over the skin. The lice will be dead within two hours, and never will multiply again. I have used ten kinds of the strongest

poison to kill lice all with effect, but none so perfect as this. M. T.

Ellisburg, Jefferson co., Dec. 30, 1841.

OF THE IMPROVEMENT OF RACES.

From Lindley's Horticulture.

What has been stated in the preceding chapter, concerning the preservation of the races of domesticated plants, is in some measure applicable to their improvement, because the very means employed to preserve those peculiarities of habit which render them valuable, will, from time to time, be the cause of still more valuable qualities making their appearance. There are, however, other points of great importance on which the gardener has dependence.

A fixed improvement in the quality of the produce of a plant can only be obtained in one of two ways; either *directly*, by accidental variations in itself, or *indirectly*, by the process of muling.

Direct alterations in the quality of seedling plants often occur from no apparent cause, just as those accidental changes, called "sports," in the color or form of the leaves, flowers, or fruit, of one single branch of a tree, occasionally break out, we know not why. Of these things, physiology can give no account; but it is known that, when such sports appear, they indicate a permanent constitutional change in the action of the limb thus affected, which changes may be sometimes perpetuated by seed, and always by propagation of the limb itself, when propagation is practicable. It is in this way that many of our fruits have probably, and several of the Chinese chrysanthemums have certainly, been obtained. It was apparently thus that the nectarine emanated from the peach. It is possible that many new forms of shrubs might be procured by keeping these facts in view, and that climbers might be deprived of their climbing habits; for it is known that the handsome evergreen bush called the tree ivy, which grows erect, with scarcely the least tendency to climb, has been procured by propagating the fruit-bearing branches of trees of considerable age.

But we are by no means destitute of the power of procuring, with considerable certainty, improved varieties, by an application to practice of physiological principles. In the last chapter has been shown the importance of securing the production of seed by plants in the most healthy state possible, because a robust parent is likely to afford a progeny of similar habits to itself. In annuals, however, this is apparently restrained within narrower limits than in woody plants, from the great difficulty of fixing a new peculiarity in the former, and the facility with which it may be effected in the latter case, by means of buds, cuttings, grafts, and similar modes of propagation. The great object of the scientific gardener who desires to improve the varieties of plants upon principle will be, then, by artificial means, to bring the parent from which seed is to be saved as near as possible to that state at which he desires the seedling to arrive.

It is well known that the abstraction of fruit and flowers augments the vigor of the branches, or of the parts connected with them, and that the removal from the former of any part which takes up a portion of the food employed in the support of the flowers increases their efficiency. Thus those varieties of the potato, which will neither flower nor fruit otherwise, may be made to do both by stopping the developement of tubers; and, on the other hand, the size and weight of the tubers themselves are increased by preventing the formation of flowers and fruit. The course, then, to take, in obtaining the largest possible tubers in a new variety of the potato, would be, in the first place, to effect that end temporarily, but during several successive seasons, by abstracting all the flowers and fruit, and by such other means as may suggest themselves; and then to obtan the most perfect seed possible by a destruction of the tubers during the season when seed is finally to be saved. Mr. Knight found, in raising new varieties of the peach, that, when one stone contained two seeds, the plants these afforded were inferior to others. The largest seeds, obtained from the finest fruit, and from that which ripens most perfectly and most early, should always be selected (*Hort. Trans.*, i. 39); and, in his incessant efforts to obtain new varieties of fruit of other genera, he had reason to conclude that the trees, from blossoms and seeds of which it is proposed to propagate, should have grown at least two years in mould of the best quality; that during that period they should not be allowed to exhaust themselves by bearing any considerable crop of fruit; and that the wood of the preceding year should be thoroughly ripened (by artificial heat when necessary) at an early period in the autumn; and, if early maturity in the fruit of the new seedling plant is required, that the fruit, within which the seed grows, should be made to acquire maturity within as short a period as is consistent with its attaining its full size and perfect flavor. Those qualities ought also to be sought in the parent fruits, which are desired in the offspring; and he found that the most perfect and vigorous progeny was obtained, of plants as of animals, when the male and female parent were not closely related to each other. (See the *Horticultural Transactions*, i. 165.)

There are no processes known to the cultivator so efficacious in producing new varieties as that adverted to in the last paragraph, that is to say, muling or cross breeding; and it is to these operations, more than to any thing else, that we owe the beauty and excellence of most of our garden productions; more, however, I think, to cross breeding than to muling. It was entirely by the first of these processes that have been so greatly multiplied and improved our fruits for the dessert, and the gay flowers that adorn our gardens. The pelargonium, the calceolaria, the dahlia, the verbena, and a thousand others—what would they be but simple wild flowers, without the power of man exercised in this way? "To the cultivators of ornamental plants," says Mr. Herbert,* "the facility of raising hybrid varieties affords an endless source of interest and amusement. He sees in the several species of

---

* See much the most valuable and practical account of cross breeding and muling which has been yet published in regard to horticulture, in the *Amaryllidaceæ* of the Hon. and Rev. W. Herbert, p. 335, et seq.

each genus that he possesses the materials with which he must work, and he considers in what manner he can blend them to the best advantage, looking to the several gifts in which each excels, whether of hardiness to endure our seasons, of brilliancy in its colors, of delicacy in its markings, of fragrance or stature, or profusion of blossom; and he may anticipate, with tolerable accuracy, the probable aspect of the intermediate plant which he is permitted to create; for that term may be figuratively applied to the introduction into the world of a natural form which has probably never before existed in it. In constitution the mixed offspring appears to partake of the habits of both parents; that is to say, it will be less hardy than the one of its parents which bears the greatest exposure, and not so delicate as the other; but, if one of the parents is quite hardy, and the other not quite able to support our winters, the probability is, that the offspring will support them, though it may suffer from a very unusual depression of the thermometer, or excess of moisture, which would not destroy its hardier parent."

In the many successful attempts made by Mr. Knight to improve the quality of fruit trees by raising new varieties, his method was to obtain crossbreds by fertilizing the stigma of one variety of known habits with the pollen of another also of known habits. But, in doing this, his experiments were not conducted at random, and without due consideration; on the contrary, we learn from himself that he was very careful in selecting the parents from which his crossbreds were obtained. He found that the general opinion, that the offspring of crossbred plants as well as crossbred animals usually presents great irregularity of character, is unfounded; and that if a male of permanent habits, and of course not crossbred, be selected, that will completely overrule the disposition to sport, "the permanent character always controlling and prevailing over the variable." He tells us that he usually propagated from the seeds of such varieties as are sufficiently hardy to bear and ripen their fruit, even in unfavorable seasons and situations, without the protection of a wall, because, in many experiments made with a view to ascertaining the comparative influence of the male and female on their offspring, he had observed in fruits, with few exceptions, a strong prevalence of the constitution and habits of the female parent. Unfortunately, however, this is precisely the reverse of the result at which Mr. Herbert has arrived in the very great number of experiments performed by himself on that subject, he believing that the male parent generally influences the character of the foliage, and the female that of the flowers (*Amaryllidaceæ*, p. 348, 377); and although it does appear to me that, in the majority of cases, Mr. Herbert's opinion is the more correct of the two, yet I fear there is too little certainty in the results of hybridizing to justify the establishment of any axiom upon the subject.

This power of muling, properly so called, is confined within very narrow limits, and can hardly be said to exist at all between species of different genera, unless under that name are comprehended some of the spurious creations of inconsiderate botanists. There are, indeed, many cases of species very closely allied to each other which it is either impossible to mule, or so difficult that no one has yet succeeded in effecting it. Mr. Knight never could make the Morello breed with the common cherry. I have in vain endeavored to mule the gooseberry and currant, and we do not possess any garden production known to have been produced between the apple and the pear, or the blackberry and the raspberry, any of which might have been expected to intermix. As to mules obtained between plants of distinct genera, we have, no doubt, upon record, some experiments said to have been performed successfully in crossing a thorn-apple with tobacco, the pea with the bean, the cabbage with the horse-radish, and so on; but Mr. Herbert regards these cases, and I think with great reason, as apocryphal, and not to be relied on; the fact being, as he truly states, "that in this country, where the passion for horticulture is great, and the attempts to produce hybrid intermixtures have been very extensive during the last fifteen years, not one truly bigeneric mule has been seen."

On the other hand, cross breeding will take place quite as readily among plants as among animals, and it is difficult to estimate the alteration which this process has really produced, although unperceived by us, in the amelioration and alteration of long-cultivated plants. We cannot reasonably doubt that a process so simple as that of dusting the stigma of one plant with the pollen of another, which must be continually happening in our gardens, either through the agency of insects or the currents in the air, and which, where it takes place between two varieties allied to each other, must necessarily produce a cross,—we cannot suppose, I say, that this occurs in our crowded gardens and orchards at that time only when we perform it artificially.

The operation itself, although so simple, consisting in nothing more than applying the pollen of one plant to the stigma of another, nevertheless requires to be guarded by some precautions. In the first place, it is requisite that the flower whose stigma is to be fertilized should be deprived of its own anthers before they burst, otherwise the stigma will be self-impregnated, and although superfœtation is not, by any means, impossible, yet it is not very likely to occur. Then, again, the application of the stranger pollen should be made at the time when the stigma is covered with its natural mucus; if not, the pollen will not act, either in consequence of the necessary lubrification of itself being withheld, from the stigma being too young, or because the stigma, from age, has lost its power of receiving the action of the pollen. Neither should the stigma be in any way injured after fertilization has apparently taken place. The art of fertilization consists in the emission, by the pollen, of certain tubes of miscroscopical tenuity, which pass down the style, and eventually reach the young seed, with which they come in contact; and, unless this contact takes place, fertilization misses. Now the transmission of the pollen tubes from the stigma to the ovule, through the solid style, is often very slow, sometimes occupying as much as a month or six weeks, as in the mistletoe.

Those who occupy themselves in attempts at improving the quality of cultivated plants should be aware of this: namely, that the real quality of either the fruit or the flower of a seedling cannot be ascertained when they are first produced; for it is only as plants advance in age that the secre-

tions necessary for the perfect production of either the one or the other are elaborated. Of this fact, the first produce of the black eagle cherry tree afforded a striking example. A part of it was sent, with other cherries, to the Horticultural Society; and it was then, in the fruit committee, pronounced good for nothing. It was so bad, that Mr. Knight, who raised it, would most certainly have taken off the head of the tree and employed its stem as a stock, but that it had been called the property of one of his children, who sowed the seed which produced it, and who felt very anxious for its preservation. It has now become one of the richest and finest fruits of its species which we possess.

It may be expected that some mention should here be made of double flowers, and of the manner in which they are to be obtained. But I confess myself unable to discover, either in the writings of physiologists, or in the experience of gardeners, or in the nature of plants themselves, any sufficient clue to an explanation of the causes to which their origin may be ascribed. There are, however, several facts apparently connected with the subject, which deserve mention.

A double flower, properly so called,* is one in which the natural production of stamens or pistils is exchanged for petals, or in which the number of the latter is augmented without any disturbance of the former; in other words, it is a case of the loss, on the part of a plant, of the power necessary to develope its leaves in the state of sexual organs. But what causes that loss of power we do not know. It can hardly be a want of sufficient food in the soil; for double flowers (the Narcissus, for instance) become single in very poor soil. On the other hand, it can scarcely be excessive vigor; for no one has ever yet obtained a double flower by promoting the health or energy of a species. When plants are excessively stimulated by unusually warm damp weather at the period of flowering, their flowers in such cases sometimes became monstrous: but the effect of this is to lengthen their axis of growth, and to form true leaves instead of floral organs, just the reverse of what occurs in a truly double flower; the varieties of rosa Gallica often exhibit this kind of change. In damp cloudy summers, some flowers assume the appearance of being double, by the change of their sexual organs into small green leaves, as occurred very generally to Potentilla nepalensis in the summer of 1839, but there was, at the same time, scarcely a trace of any tendency, on the part of those leaves, to assume the color or texture of petals.

There is, evidently, a greater tendency in some flowers to become double than in others, and especially in those having great numbers of stamens or pistils. All our favorite double flowers, hepaticas, pæonies, camellias, anemones, roses, cherries, plums, ranunculuses, belong to this class; and, in proportion as the natural number of stamens diminishes, so do both the disposition to become double, and the beauty of the flowers when altered. The pink and carnation with ten stamens are the handsomest race next to those just mentioned; while the hyacinth, the tulip, the stock, and the wallflower with six stamens, and the auricula and polyanthus with five, form altogether an inferior race, if symmetry of form, and regularity of arrangement in the parts of the flower, are regarded as beauties of the highest order. If the mere circumstance of a plant having but a small number of stamens be a bar to its beauty when made double, how much greater an obstacle to it must be the natural production of unsymmetrical flowers. This occurs in the snap-dragon, which, with a five-lobed corolla, has but four stamens; and the consequence is, that, when it becomes double, the flower is a confused crowd of crumpled petals issuing from the original corolla.

I have heard of attempts to produce double flowers by artificial processes, but I never heard of the smallest success attending such cases, unless the tendency to their production had already manifested itself naturally; as in the stock, which will frequently become single from having been double, in which case its original double character may be recovered. A mode of effecting this has been described by Mr. James Munro (*Gard. Mag.*, xiv. 121). Having a number of single scarlet ten-week stocks, he deprived them of all their flowers as soon as he found that five or six seed-vessels were formed upon each spike, by which means he compelled all the nutritive matter that would have been expended upon the whole flower-spike and its numerous seed-vessels to be concentrated in the small number which he left; and the result, he says, was, that from the seed thus saved he had more than 400 double stocks in one small bed.

There can, I think, be no doubt that, if any original change to a double flower can possibly be effected by art, it will be more likely to occur with respect to those species which have an indefinite number of stamens, where the tendency to this monstrosity already exists. It is not many years since the chryseis (Eschscholtzia) Californica, a polyandrous plant, was introduced to our gardens; and I, at one time, made some attempts to render it double, conceiving it a good subject for experiment on that account, but I had no success; it has, however, accidentally become semi-double in Mrs. Marryat's garden, at Wimbledon; and I entertain no doubt that seed skilfully saved from that plant would present its flowers in a still more double condition.

* What is called a double dahlia is misnamed; and so are all so-called double composite flowers. The appearance of doubling is caused in these plants by a mere alteration of the florets of their disk into the form of florets of the ray; a very different thing from double flowers.

CLOVER AND TIMOTHY—MANURE.

From the Union (Ill.) Agriculturist.

* * * Whilst writing permit me to say, that my experience in raising grass (having cultivated as much as any in this county) amounts to this—clover and timothy mixed will yield one third more hay in lbs. than timothy alone, and more than clover alone, and will stand a drought much better.

Further—Land that is well manured produces double the crop of that which is not. I have tested it in the same field. Rushville prairie appears as rich as any land I have seen in the state, yet *one* load of manure will do as much good as on any land I have ever noticed, however poor. Yours, J. D. MANLOVE.

Rushville, Dec. 21, 1841.

ON GUANO.

(Continued from page 58.)

Of the economical or money value of guano to the English agriculturist.—We come now to consider perhaps the most important question of all, namely, the probable economical value of guano to the English agriculturist.

It may by most persons be considered impossible to arrive at any satisfactory conclusions in regard to this point except by actual experiment—by the trial, that is, of its *precise* effects on different crops and in different soils. This is no doubt the most certain and unexceptionable method of determining its value—but this method requires time, and the concurrence of many individuals. Until these trials are actually made, therefore, we are entitled to inquire of theory how far it can assist us in forming an idea of the absolute money value of this new manure, and we shall be justified in allowing ourselves to be in some measure guided by the answer which theory may give.

I.—Let me first introduce the partial results already arrived at by practical men.

1. Mr. Skirving writes me thus:—"With regard to the relative cost of guano and farm-yard manure, allowing guano to cost 25*s*. per cwt., which I believe is the price at present, it would cost no more to supply 8 cwt. to the acre than 20 tons of manure would; for in this neighborhood in spring-time good horse and cow dung is never under 10*s*. or 12*s*. per ton, besides the heavy carriage and extra expense of application, which on some land would make a great difference."

2. In connexion with his experiment on turnips, above detailed, Mr. Pusey remarks that, although it is impossible to form an opinion from a single experiment, he thinks a farmer who could afford to dress with 20 bushels of bones per acre, at 3*s*. a bushel, might find the guano answer at 20*s*. per cwt.

These two opinions, formed from imperfect or incomplete experiments, are valuable so far as they go; but they can neither as yet be considered a safe guide to the farmer, as to what he may venture to pay for this manure,—nor to the merchant, as to what he may venture to ask for his commodity.

II. But for what price can it be imported? Mr. Darwin informs us that at Arica, in Peru, the nitrate of soda is sold at the ship's side at 14*s*. the 100 lbs., or 15*s*. 6*d*. a cwt.; and in this country it used to be sold at 18*s*. or 19*s*. though during the last year it has risen to 26*s*. and 28*s*. a cwt. We may suppose therefore, that 4*s*. or 5*s*. a cwt. would pay all expenses of freight, and leave a handsome profit to the importer. Now, Mr. Winterfeldt * states that the red and dark-gray varieties of the guano, those imported into this country, are worth 2*s*. 3*d*. a cwt. in Peru; in this country, therefore, from 7*s*. to 10*s*. a cwt. ought to be a remunerating price to the merchant, if Mr. Winterfeldt be correct.

It is true that an article is worth to the seller exactly what it will bring in the market, but it is of great importance, not only to the agriculture of the country, but to the speculators themselves, that the price of this commodity should be kept at a reasonable rate. Not only will many more be willing to try it on their farms, if the price be low, but the general demand for it will increase in proportion as the exact experimental farmer shall become satisfied that the use of it is attended with profit to himself.

Every man has a right to a fair return for his own labor, and to an adequate compensation for pecuniary risk; and those persons deserve especial compensation who have hazarded their money in importing a substance which, like guano, may minister to the most vital wants of the country; but those who, having themselves no pecuniary interest in practical farming, are yet desirous, as good citizens, to promote the growth of food as the foundation of national prosperity, may be excused in considering the chance of *great* profits to speculators, as subordinate to the general interests of the agriculture of the country.

III. Let us then advert to theory, and see the *highest* price which, according to its indications, the farmer ought to be called upon to pay for the guano.

We have seen that this substance is a mixture of various chemical compounds. It is a natural mixture; but an artificial mixture may be made which shall more or less completely imitate it. What would such a mixture cost at the present price of the several ingredients of which it consists? The phosphate of lime it contains exists abundantly in bones: the ammonia may be applied either in the form of sulphate of ammonia or of sal ammoniac, both of which are low in price: the common salt and sulphate of soda can be obtained at little cost; and the urea, being so small in quantity, may be either neglected altogether, or may be replaced by a little dried urine or night-soil (Poitevin's manure.) A mixture of this kind, equal in virtue to 4 cwt. of guano, would cost as follows:—

315 lbs. or 7 bushels of bone-dust, at 2*s*. 9*d*.	£0	19	3
100 lbs. of sulphate of ammonia, containing 34 lbs. of ammonia	0	15	0*
5 lbs. of pearl-ash	0	0	10
100 lbs. of common salt	0	2	0
10 lbs. of dry sulphate of soda	0	0	10
530 lbs., equal to 4 cwt. of guano.	£1	17	11

To these it might be advisable to add 100 lbs. of chalk to aid in gradually converting the sulphate of ammonia into carbonate, in which state it may possibly be more immediately active upon the plant. This, however, is a matter for trial, as I am aware of very beneficial results having been obtained during the past season from the application of sal ammoniac in admixture with other substances, without the presence of chalk.

I consider the above mixture as likely not only to be equally efficient with 4 cwt. of guano, costing at present 5*l*., but ultimately it may be more so; and this chiefly because in specifying the ingredients no account has been taken of the animal matter present in the bones, though the quantity of gelatine they contain is itself sufficient dur-

* "The red and dark-gray are worth 2*s*. 3*d*. a cwt. The white is sold in the port of Mollendo at 3*s*. 6*d*. a cwt.; and at times, as for instance during the war, it has brought as high a price as 12*s*."—Winterfeldt.

* At the pleasure of the experimenter, a *portion* of the sulphate of ammonia may be replaced by nitrate of potash, in the proportion of about three of the nitrate to two of the sulphate.

ing its slow decay to yield about 30 lbs. of ammonia to the soil. I have not taken this into account, because the special and immediate action of guano seems to depend upon its containing, like farm-yard manure, ammonia ready formed, and thus prepared to act without delay on the plant to which it is applied. That growth which the ammonia of the sal ammoniac in our mixture is fitted to hasten and provoke, the ammonia which is afterwards slowly evolved from the decaying animal matter will carry forward and help on to maturity. The few pounds of potash in the mixture have been added, not because this substance is always present in the guano, but because it is known that nearly all plants require a certain small quantity of this alkali for the perfect developement of their several parts. Another advantage which will be possessed by the artificial mixture will be, that its constitution will be constant, and may always be calculated upon.

From these theoretical considerations, therefore, we should say that until its virtues are proved to be greater, beyond dispute, than those of the above or similar mixtures, the practical farmer ought not to purchase guano at a higher price than 20*s.* per cwt., a price which in the opinion of Mr. Pusey the farmer may probably afford to pay—which according to Mr. Winterfeldt would more than remunerate the importer—and below which, according to the chemist, an artificial guano of equal efficacy may be prepared in England, and *from the superabundant produce of our own manufactories.*

Of comparative experiments with guano and other manures.—But the absolute value of guano itself, as well as its relative value compared with other manures, can only be placed beyond dispute by actual and comparative trials of its efficacy in different soils and upon different crops. To be really useful and satisfactory these trials must be made according to some well-digested method, and the comparison must be made with known weights of other substances, the action and money value of which are known, and which from their constitution may be supposed to act on vegetation in a similar way. As I have elsewhere endeavored to draw the attention of practical men to the importance of well-devised and carefully executed experiments in practical agriculture*—not only to the general economy of the art of culture, but also to the establishment of a true theory of its various processes—I shall take the liberty of introducing a few suggestions in regard to the kind of experiments which appear to me most likely to yield results at once economically and theoretically useful.

Among those substances which owe one main part of their beneficial agency on vegetable life to the ammonia they contain or evolve, may be reckoned farm-yard manure, crushed bones, and rape-dust. As the nitrates also act upon plants in a way so far similar to ammonia as to yield nitrogen to them, the nitrates of potash and soda may be included in the list of substances with which it would be desirable to compare the action of the guano. The cost of all these substances is known,—they are all to a certain extent in general use,—and while comparative experiments accurately made by weight and measure would throw light on many obscure points in regard to the action of each of these manures,—the results obtained from every separate plot of ground would serve as so many points of comparison by means of which the absolute and relative value of the guano might be determined.

In the present state of our practical knowledge respecting this substance, it will be pronounced by every one to be desirable that its effect should be tried upon every kind of crop; but the propriety of this course is increased by our knowledge of its chemical constitution. It contains the greater part of the ingredients which are necessary to the growth of almost every variety of crop. It will doubtless prove as efficacious therefore to old pasture-land as to the rye-grass in Mr. Skirving's nursery, and to crops of corn as to Mr. Pusey's turnips; but experience alone can tell us to which it may be applied with profit to the farmer, and from what crops it will afford him the greatest return on a given soil.

I would propose therefore that it should be tried during an entire rotation to replace farm-yard manure and the other substances named, as well as against the mixture above described, which I shall distinguish by the name of *artificial guano.* The mode of making the experiments may be varied at the wish of the practical farmer, but they might be made in a way similar to that represented beneath, each square being a half or quarter acre or other accurately measured plot of land.

20 tons of Farm-yard Manure.	20 bushels of Bones with Ashes.	6 cwt. of Guano mixed with Chalk or Gypsum.	6 cwt. of Artificial Guano.
10 tons do. with 10 bushels of Bone-dust.	20 cwt. of Rape with Ashes.	10 tons of Farm-yard Manure with 3 cwt. of Guano.	10 tons of Farm-yard Manure with 3 cwt. of Artificial Guano.
10 tons do. with 10 cwt. of Rape-dust.	10 cwt. of Rape with 3 cwt. of Guano.	10 tons do. with 2 cwt. of Guano.	10 tons do. with 2 cwt. of Artificial Guano.

The practical farmer need not be deterred by the formidable array of experiments above suggested. He may try any two or three of them, and his results will be valuable in proportion to

* See a small tract published by Blackwood, under the title of "*Suggestions for experiments in practical agriculture.*"

the accuracy with which his land is measured and his manures and crops weighed. I have taken 20 tons of farm-yard manure as a standard, though in many highly farmed parts of the country no more than 15 tons are usually applied. Twenty bushels of bones are recommended by the Doncaster report, and I have lately found that in the Lothians 1 cwt. of rape-dust is considered to replace 1 ton of farm-yard manure. This proportion of course will vary with the quality of the latter manure; but, whatever quantity of this latter we take as the standard of comparison, it is easy to adjust the proportions of the other substances accordingly. I have not recommended any trial to be made with more than 6 cwt. of guano, because, where farm-yard manure is valued only at 6*s.* or 7*s.* per ton, 5 cwt. of the former would cost as much as 20 tons of the latter.

The above experiments are intended to be made with the green crop and continued during an entire rotation;* any pair of them, however, may be tried on single crops, whether of corn or of turnips and potatoes. In this way it ought also to be tried against nitrate of soda and against bones, upon seeds and upon old grass-lands. The modes in which such experiments may be made will readily suggest themselves to the intelligent farmer. *In all cases the results should be accurately recorded, and if possible published.*

I consider it of importance that an artificial mixture, similar to that above suggested, of which the composition is known, and which can anywhere and by any one easily be made, should be fairly tried against the guano;† because it does not appear, as some have been led to believe, that the supply of this substance on the coast of Peru is by any means inexhaustible.

According to Mr. Winterfeldt the supply of recent guano has diminished materially even in recent times; and in an extract from his letter already given he mentions one extensive deposite of the old guano in the island of Iquique, which was exhausted in 25 years by the local consumption only.

But the diminution is placed in a stronger light by Mariano de Rivero, in a paper published in the Spanish language, but from which an extract is given in Ferussac's Bulletin (sec. I., tom. xi., p. 84.) He says—

"The Spaniards permitted the wise ordinances of the Incas, which ensured the preservation of this valuable manure, to be entirely forgotten. The Peruvians are now aware of this great error, and see with anxiety the period approaching when the guano will no longer be obtained in sufficient quantity to meet the demands of the agriculture of the country. *The discovery of new deposites of the brown guano, which is of very ancient origin, is daily becoming more rare,* while the production of the recent white guano is rapidly diminishing, since, through the freedom of commerce, so many vessels have visited the coast and scared the birds which frequented them."*

If the above account is correct, it is the interest of Peru to prohibit the exportation of the guano; but the introduction of it into this country in the mean time will prove a great national service, if it shall teach us to imitate so valuable a natural production, and, by making available those articles of home manufacture which have hitherto been neglected by the agriculturist, to supply the lack of farm-yard manure, and thereby to raise a greater amount of food than we should otherwise be able to do. Thus at the same time will the chemical arts and the art of culture be bound together by still another tie, and the mutual dependence of all classes of the community, however apparently distinct their industrial occupations, be still more distinctly illustrated.

Durham, 20th October, 1841.

* By this I mean that the effect of these several manures applied *once for all* to the green crop at the commencement of the rotation, should be traced on each successive crop through the entire course of cropping.

† I have not suggested the comparative trial of such substances as those sold under the name of urate, animalized carbon, &c., because, though I have no doubt of their efficacy when prepared after a certain manner, yet the practical farmer has no guaranty that what he purchases this year shall prove equal in virtue to that which he applied to his land in a former season.

THE CULTURE OF SUGAR.

From the Philadelphia Public Ledger.

Until the production of sugar from the maple, and more recently from beets, the production of this *necessary* of human life was supposed to be confined to the tropics. But though maple sugar is the produce of temperate regions, its cultivation is necessarily too limited to supersede extensively the use of tropical or cane sugar, and this cultivation must decline with the settlement of the country. Most of the trees which afford sugar are found in the primitive forests; and as thirty years at least are required to produce a maple tree of sufficient size for sugar, the cultivation of sugar orchards by the present generation, for its own use, is impracticable, and we cannot expect that a people will labor for posterity, in a new country which demands all their labor for themselves in immediate returns. We may add that in our mode of clearing land of forests by *fire* as well as *steel,* the preservation of the spontaneous growth of maples is out of the question. Therefore we can only manufacture maple sugar in new settlements and by an expenditure of labor that might be more profitably employed. The whole quantity of sugar produced in the United States in 1840, was 155 millions of pounds. Of this quantity, Louisiana produced about 120 millions, Georgia about 330,000, and Florida about 275,000 pounds, the whole of which was doubtless cane sugar. This quantity, about 120½ millions, deducted from the whole quantity, leaves 34½ millions for maple and beet sugar. Of this quantity, New York produced 10 millions, Pennsylvania about 2¼ millions, Virginia about 1½ million, Kentucky about 1¼ million, Ohio about 6½ millions, Indiana about 3¾ millions, and Michigan about 1½ million; and of these 34½ millions, the whole was maple sugar, excepting, perhaps, a small quantity produced in Pennsylvania, in the vicinity of this city. The whole of this sugar was consumed at home; for notwithstanding all this production, 120 millions of

* See Poggendorf's Annalen, vol. xxi. p. 606.

pounds was imported for domestic consumption, the whole of which was cane sugar. Thus of 275 millions of pounds of sugar consumed in the United States, about 240 millions are cane sugar. These facts show that the quantity of maple sugar manufactured bears a small proportion to the whole consumption, and that this quantity must annually decline with the removal of the forests.

Of beet sugar, 150 millions of pounds are annually manufactured in Europe; but as cane sugar is cheaper, protecting duties are necessary for the cultivation of the former. But in the United States, the quantity of beet sugar produced is trifling and probably it will not become a substitute, extensively, for sugar cane. Nevertheless, our country does produce a species of sugar which might supersede entirely the consumption of cane sugar, foreign or domestic, and even become an article of exportation. *Indian corn* contains sugar in large quantities, and might be profitably cultivated for it in every part of the Union. According to Beaumé's *saccharometer*, or apparatus for ascertaining the quantity of saccharine matter in plants, the corn stalk reaches to 10 degrees of saccharine matter, which is three times greater than that of the beet, five times greater than that of the maple tree, and fully equal to the cane in the United States. Experiments prove that six quarts of the juice of corn stalks produce one quart of crystallized syrup, or sugar, which is a product of 16 per cent., while thirty-two quarts of maple sap will yield only one quart of syrup. And besides furnishing as great a proportion of saccharine matter as the cane, the corn stalk can be produced, for sugar, within 90 days, while the cane requires at least 18 months of careful and laborious cultivation to bring it to maturity.

To produce the greatest quantity of saccharine matter in corn stalks, the ear must be plucked so soon as it appears; and by this process, all the saccharine matter that would have been used in forming the ear, is retained in the stalk. One thousand pounds of sugar may easily be produced from an acre of corn. Those to whom this seems incredible, will remember that a bushel of ripe corn will weight about sixty pounds, and therefore that fifty bushels, an ordinary crop to the acre, will weight three thousand pounds. Then as nearly all the flour or meal of corn is convertible into starch, and as starch is convertible into more than its weight of sugar, one thousand pounds of sugar to three thousand pounds of corn is not an extravagant product. To this we may add that in some parts of the country, especially South Carolina, Georgia, Alabama, Mississippi, Louisiana and Florida, two crops yearly for sugar might easily be produced. By the removal of the ear so soon as it appears, this whole quantity of saccharine matter is retained in the stalk, in addition to the quantity which it contains when the corn is allowed to ripen.

By proper cultivation, we believe that fifteen hundred pounds of sugar might be produced from an acre, in a single crop, and not less than twenty-five hundred pounds in two crops. We must add that while the machinery for manufacturing cane sugar is cumbrous and expensive, that for corn sugar is light and cheap, the stalk requiring only one fifth of the pressure necessary for cane. Besides, cane being an exotic in the United States, only a small portion of it yields saccharine matter, while the whole of the corn stalk yields it, excepting the *spindle* or top. The stalks, after pressure, with the leaves, are worth enough, it is said, as food for cattle, to defray the expenses of cultivation.

Though no experiments have been made to test the value of corn stalks for sugar, when dried, we doubt not that they are as valuable for this purpose, as when green; for as nothing but the water evaporates in the process of drying, all the saccharine matter must remain; and by the process of straining, the stalk may afterwards be subjected to the press without any loss. This process of drying and subsequent straining is used in the cultivation of beets for sugar; and if it can be applied to corn stalks, as we believe, the cultivation of corn sugar will be greatly facilitated; for in that case, the manufacture can be postponed till the winter or end of the autumn, when most other agricultural labors are ended.

Corn being indigenous in all parts of the union, while the cane is an exotic, and confined to a small southern district, the cultivation of corn sugar may entirely supersede that of the latter. The average crop of sugar in Louisiana is 900 or 1000 pounds to the acre, about one third of the product in Cuba and other tropical regions. And besides, the capital necessary for cane sugar being great, it cannot be cultivated by landholders of moderate means; and of all modes of southern cultivation, cane sugar has been the least profitable. All parts of the United States are subject to frosts, and when they occur in Louisiana, where they are not uncommon, the sugar crop is destroyed or injured; and to escape them, the sugar planters are obliged, when the cane is ripe for cutting, to employ their laborers incessantly during day and night, in cutting and pressing. But on the sugar lands of the south, two crops of corn for sugar might be produced annually, before the appearance of frosts, both yielding 2500 or 3000 pounds of sugar. Hence, besides being a profitable crop in all other states, corn sugar would be a far more profitable crop than cane sugar in Louisiana. We commend this subject to the notice of sugar planters, and advise them to make an experiment in the cultivation of corn. Their preparations for the manufacture are already made in their machinery for cane sugar, and they would be merely required to raise the corn. In Louisiana, corn grows not less than twelve feet in height, and like all other plants produced in southern regions, must contain more saccharine matter than northern corn. Hence, if an acre of northern corn would yield, at the rate of fifty bushels of ripe corn to the acre, over one thousand pounds of sugar, an acre in Louisiana would yield fifteen hundred or two thousand pounds. Then if it be a profitable crop at the north, much more so will it be in Louisiana and other districts of the union where sugar cane is now cultivated.

According to Mr. Ellsworth's report, the quantity of corn produced in the union, in 1840, was 387 millions of bushels; and if the whole of this had been converted into sugar, at the rate of twenty pounds of sugar to the bushel of sixty pounds of corn, which is a very moderate esti-

mate, the product of sugar would have been 7740 millions of pounds. By twenty pounds of sugar to the bushel, we mean that the quantity of corn stalks that would have produced sixty pounds of ripe corn, will produce twenty pounds of sugar. Therefore, if only about a twenty-fourth part of this corn had been converted into sugar, the product would have equalled the whole quantity of sugar, foreign and domestic, consumed in the United States. This quantity, as we have already stated, is 270 millions of pounds; and at the rate of twenty pounds to the bushel, it would require 13¾ millions of bushels. This being a small proportion to 387 millions of bushels, and at the rate of fifty bushels to the acre, and one crop annually, could be produced on only 275,000 acres of land. Then if 275,000 acres of land, cultivated for corn sugar will give a substitute for the whole quantity of sugar consumed in the United States, how boundless are their agricultural resources for sugar alone! With such a reserve, the south have no cause to tremble for the loss of their cotton crop for England, through the cultivation of cotton in India.

PROPER TREATMENT FOR CATTLE NEWLY BROUGHT TO THE SOUTH.

From the Ploughboy.

Mr. Editor—By giving publicity to the following letter you will confer a favor on those who feel an interest in improving their stock of cattle. It is superfluous to add that the great skill and acknowledged success of Col. Hampton, in rearing the finest stock in the state, entitle his opinions to be regarded as of the highest authority; and the liberality with which he has communicated the results of his experience entitles him to the thanks of this community. J. T.

Columbia, January 24, 1842.

My dear sir—Without detaining you with an apology, for so long a delay in answering your favor of the 31st ult., I proceed at once to the subject matter of your inquiries. All cattle imported from England, the north and the west, are very liable to be attacked by a fatal disease, which I take to be an inflammation of the brain.

Young cattle, from eight months to one year old, are less subject to it than those more advanced in life. If they survive the summer and autumn, I consider them safe, although great care should be taken of them the second season. They should be brought into the state as early in the fall as possible, kept in good growing condition through the winter, and in the spring be removed to a high healthy position, have easy access to pure water, and their pasture as much shaded as the nature of the ground will admit. In August and September they should be kept in a cool stable during the heat of the day, and at night also, the dew at that season being almost as injurious as the intense heat of the sun.

With these precautions, I think more than half would escape the disease, the first indication of which is usually a languid appearance of the animal, followed by the loss of appetite, short, quick breathing, with more or less fever, and not unfrequently accompanied by a cough.

I have hitherto considered this disease, when once established, incurable. I have recently learned, however, that by sawing off the horns, close to the head, nine out of ten would recover. In two cases only have I known the remedy to be tried, and in both the experiment was successful. I shall be highly gratified if any of these suggestions shall be useful to you or any of your friends; and wishing you entire success in your experiment, I am very respectfully and truly yours,

J. Terry, esq. W. Hampton.

FACTS IN HOG FEEDING.

From Colman's Fourth Report of the Agriculture of Massachusetts.

One of the farmers whom I visited had then in his sties three swine, whose average weight would equal four hundred pounds each. They were fed three times a day, with a mess of 12 quarts of meal to each per day, composed of the meal of oats and Indian corn, mixed in equal parts and stirred in cold water. The price of oats at that time was 42 cents per bushel,—of corn, 84 cents per bushel;—6 qts. of oatmeal would be cts. 8.4; 6 qts. of corn meal would be cts. 16.8, —total, 25 cents 2 mills each per day as the cost of keeping. The price of pork at that time was six to seven dollars per 100 lbs. A gain of two pounds a day, live weight, would much exceed the ordinary gain of a fattening hog, although, in a remarkable case, I have known the daily gain, for eighteen days in succession, to exceed three pounds. At two pounds a day, there must be a considerable loss in this feeding. The prices of grain, however, were above the usual prices; and the price of pork was depressed.

Another farmer, in fattening three swine, allowed them one peck of meal each per day. The mess was composed of Indian corn, buckwheat and oat meal, mixed in equal quantities. The price of corn was 84 cents; buckwheat, 56 cents; oats, 42 cents per bushel. One peck of this mixture cost fifteen cents.

One of the most exact and careful farmers in the county fattens his swine chiefly in the winter, so as to have them in the market in March, when pork generally bears a good price. He has close sties, which are kept with great neatness; his swine are fed with exactness and punctuality; and in severe weather, he endeavors, by closing the windows and doors, to keep up a moderate temperature in his sties by a fire in the furnace, where he cooks his food for his swine. Another farmer in Leverett, who makes excellent pork, prefers the winter fattening of swine, but is extremely careful that they shall not suffer from cold, his sties opening to the south, and being always abundantly littered. The farmer first alluded to has made trial of molasses for his swine, having purchased a condemned lot at a low price. He gave at the rate of half a pint per day to each hog, with great advantage as he supposed, though no accurate observation or test was made to determine the gain, and the proportion of that gain, if any, to be attributed to this article of food.

A farmer in Buckland considers ruta-baga, fed raw to swine, of equal value as raw potatoes. This judgment, he says, is the result of his own experience. A farmer in Hawley thinks swine

may be fatted to great advantage, when the price of pork is 10 cents in the market and corn is one dollar per bushel. This is rather a loose estimate, and I should not quote it, but for my great confidence in this farmer's long experience and careful judgment. An excellent farmer in Conway puts up his hogs to be fatted in August, and he greatly prefers pumpkins to potatoes. There is no doubt that the pumpkin is a very nutritious vegetable. A very large amount may be raised upon an acre. The difficulty lies in their preservation; but when they can be used to advantage early in the season, they are a very profitable crop.

A farmer in Charlemont says, that, after twelve years' experience, he deems apples, bushel for bushel or pound for pound, of equal value with potatoes for feeding swine. He prefers sweet apples, but is not confident that they have any advantage over sour apples.

The raising of pigs is spoken of by several farmers as an excellent business. This can seldom be done to advantage unless in connexion with a dairy. A farmer of Deerfield sold the pigs from two sows in one season for fifty-four dollars. Another in Gill sold the litters of two sows, in the spring, for fifty-nine dollars seventy-five cents. These results are, to a great extent, accidental; and depend on so many contingencies that no general rule can be drawn from them. A farmer in Northfield, on the 27th September, showed me three fine, thrifty swine, about one year old, nine tenths of whose feed, since the 13th May, had been obtained from one eighth of an acre of clover, cut and given to them in a green state.

SHEEP-KILLING DOGS.

From the Kentucky Farmer.

We noted, lately, that a petition had been laid before the House of Representatives, praying a tax on dogs, with the view of diminishing the destruction of sheep. The Commitee on Propositions and Grievances, to whom the petition was referred, have asked and obtained a discharge from the consideration of the subject; and as the petition was drawn by the Editor of this paper, leave has been obtained to withdraw it, for the purpose of printing it, as will be seen below. We drew up and offered the petition under a sense of duty; for our editorial position has furnished us facilities for learning that the farmers of the country suffer an enormous evil in the sheep-destroying propensities of dogs. We have received numerous letters and had countless verbal statements, from every quarter, of the loss annually sustained in this way; and we believed a due regard to an important interest of the state would have prompted the legislature to interpose some effectual remedy. The facts stated in the petition, we believe, are substantially true; the principles of the proposed law, in our judgment, are plainly defensible; and we deem the neglect of the legislature to protect the country from the evils incident to the enormous grievance complained of, a gross dereliction of duty. If a thousand tigers were transported from the jungles of Bengal and turned loose in the land to ravage and destroy the domestic animals, the propriety of making an organized effort, under legal sanction, for their destruction, could be defended by no arguments not applicable to that of destroying the superfluous roving dogs which swarm thoughout the land.

We are well aware that there is always attempted to be got up an odium against any one seriously moving a remedy against this evil; and we knew an instance of a most worthy man in a neighboring county, almost losing his election to the legislature for signing a petition on this very subject. Every species of opposition is offered to any movement of the sort. The good-natured crack jokes and provoke laughter and fun; the ill-natured swear most lugubriously; and there is another class, a sub-genus of political demagogues, who rave about "*rights*" and "*liberty*," but have no respect for the rights of others. But never a one condescends to favor with an argument against the justice, the policy, the expediency or necessity of an appropriate remedy for the intolerable evil.—*Ed. Ky. Far.*] * * * *

Petition of Tho. B. Stevenson, praying a tax on dogs.

The undersigned, holding a position which affords him many facilities for collecting information on the subject of this petition, is enabled to speak knowingly of an intolerable grievance suffered by a large number of the farmers of this Commonwealth and to which all are in danger of being subjected; and he conceives it his duty respectfully to present the subject to the General Assembly, praying such relief as it is in the power of legislation to grant.

The grievance complained of is the destruction of sheep by dogs. The undersigned has had much conversation with gentlemen from every quarter of the state, and he finds this grievance generally complained of. He believes that an annual loss of not less than one hundred thousand dollars is sustained by the country under this grievance. There is scarce a neighborhood in which farmers are not sufferers. Nor is the actual loss occasioned by the killing, wounding and scattering of flocks of sheep by dogs all that the country sustains in this matter. The business of wool-growing cannot be extended, without great if not entire risk, while the present evil remains. The undersigned perfectly well knows that, but for this oppressive grievance, flocks of sheep would be found grazing on the hill lands of the state, so well adapted for the raising of sheep, which are now lying idle and unproductive, because the owners fear to risk their flocks to the ravenous propensities of roving dogs. To say nothing of the intrinsic justice of removing this grievance, there is, in the present condition of our industrial interests, nothing more desirable and important than the extension of our means of production, and a change, to some extent, of our agricultural staples. These are few branches of industry of equal importance with the wool business; and its extension in Kentucky is demanded by every consideration of economy and regard for our domestic interests. And if we could extend our means of producing wool, the extension of our manufacturing interests would be as great as that of the agricultural. Our hill lands, now lying desolate and waste, can be made to sus-

tain flocks of sheep that would annually add untold thousands to our production; and their wilderness solitudes can become the abodes of a hardy, industrious and virtuous population. Yet the undersigned has known many sensible farmers, entertaining strong convictions of the practicability and productiveness of sheep-husbandry on our hill lands, utterly decline the business for no other reason than the fear of the destruction of their flocks by roving dogs. Scarce a day passes but we hear of their ravages. It is not a sufficient remedy that it is the common understanding that sheep-killing dogs may be killed wherever found. They are not always found; and if they were and all were destroyed, their destruction neither atones for the loss sustained, nor prevents other ill consequences. The evil that dogs do lives after them. A flock of sheep, once disturbed by night-prowling dogs, suffers probably greater loss than the death of a portion. The living are ever after more timid and fearful, and either run wild or grow diseased; so that, in either case, their value is seriously injured.

Every one of the least observation knows that there are at least four times as many dogs in the state as are necessary for any purpose of utility; and consequently at least three-fourths of them are not only actual consumers of food, depredators in a thousand ways, but a nuisance in all respects, to say nothing of their sheep-killing enormities. The undersigned does sincerely believe that it is the duty of the legislature to suppress these evils by severe taxation or otherwise; and any effective measure will be sanctioned alike by the wishes and interests of the people.

Not the least degree of hostility is felt by the undersigned towards dogs or their owners, when kept in proper numbers and duly trained for useful purposes. But it is utterly intolerable that the honest interests of productive industry are to be seriously injured by packs of supernumerary dogs. If severe taxation were adopted, the number of dogs would be reduced to that which would usefully serve the wants of the country; and they would then be trained for useful objects, kept at home and restrained from mischief; for it is seldom a dog attacks sheep on his owner's farm.

The danger from that horrible disease, hydrophobia, more terrible than death itself in its direst form, would be diminished by reducing the number of dogs. The life of one good citizen is worth infinitely more to the commonwealth than all the vagrant dogs that swarm in the land, making night hideous with their infernal howling, consuming the food of the land, committing innumerable depredations, and destroying flocks of innocent and useful sheep.

The undersigned prays the legislative interposition to remedy these evils in a manner at once effective and consistent with the rights and interests of all concerned. They who desire to keep dogs for purposes of utility, should be allowed to have them on the payment of a very moderate tax, such as a good citizen would cheerfully pay for a benefit secured and enjoyed under a law designed to remedy a great evil and protect the rights and interests of all. The undersigned is not entirely confident that the following scale of taxation would be precisely adequate to the desired object or strictly just to all interests; but he submits it as embodying the principles of a law which the wisdom of the General Assembly could render efficient and just.

The owner of one dog to be taxed one dollar; of two dogs, two dollars; of three dogs, four dollars; of four dogs, eight dollars: of five dogs, sixteen dollars: and so on. And all dogs unclaimed, or on which the tax is not paid, and others running at large, to be killed forthwith by any one. Respectfully submitted,

THO. B. STEVENSON.

BLACK THE WORST COLOR FOR PAINTING WOOD WORK IN THE OPEN AIR.

There is nothing that will prove this evil more than by observing the black streaks of a ship after being in a tropical climate for any length of time. It will be found that the wood round the fastenings is in a state of decay, while the white work is as sound as ever; the planks that are painted black will be found split in all directions, while the frequent necessity of caulking a ship in that situation likewise adds to the common destruction; and I am fully persuaded that a piece of wood painted white will be preserved from perishing as long again, if exposed to the weather, as a similar piece painted black, especially in a tropical climate. I have heard many men of considerable experience say, that black is good for nothing on wood, as it possesses no *body* to exclude the weather. This is indeed partly the case; but a far greater evil than this attends the use of black paint, which ought entirely to exclude its use on any work out of doors, viz. its property of absorbing heat. A black unpolished surface is the greatest absorber and radiator of heat known: while a white surface, on the other hand, is a bad absorber and radiator of the same; consequently, black paint is less preservative of wood than white. Wood having a black surface will imbibe considerably more heat in the same temperature of climate than if that surface were white; from which circumstance we may easily conclude that the pores of wood of any nature will have a tendency to expand and rend in all directions, when exposed under such circumstances; the water of course being admitted, causes a gradual and progressive decay, which must be imperceptibly increasing from every change of weather. The remedy to so great an evil is particularly simple, viz. by using white instead of black paint, which not only forms a better surface, but is a preventive to the action of heat, and is more impervious to the moisture. The saving of expense would also be immense; and I am convinced that men of practical experience will bear me out in my assertion. —*Trans. Society of Arts.*

EIGHTH AGRICULTURAL MEETING AT THE STATE HOUSE.

From the New England Farmer.

Subject—Manures.—Mr. Buckminster (Editor of Ploughman,) said he may be rather heterodox in some of his notions in regard to manures. But

he has spent much time *in the fields*, and would tell what he has found there. It is a common notion that there is nothing like *hog manure*; he does not believe it. Used once to think that horse manure was poor stuff—but if it be properly composted with litter and urine it will *last longer* than any other manure. We are deceived in regard to hog manure—it works *quick*—but does not last. One cow properly tended and littered will make twice as much manure as one hog. Neither will make much unless they are well fed.

Many old maxims are not sound, and such as are unsound should be discarded. Most people in letting farms, make it a rule that the *hay* shall not be sold. But he would let a tenant sell *half* the hay, if he would not raise grain. The grains are the great exhausters. You may make any farm manure itself, provided you sell half the hay, if you do not raise grain, and if you save all the liquid manure. Sheep manure he has always found to be light stuff—and where his sheep run upon the mowing lands in autumn, and feed close, he gets not more than half as much hay the next year as on other lands. Some say that a cow will eat as much as ten sheep: he would say she will eat but little more than five sheep.

Mr. Stanley, of Attleboro', said that people are often deceived in regard to their own practices. We put much more materials for manure into the hog pen than we put into the heap of cow manure. Did we mix as much muck, earth, &c. with the cow dung as we do with the hog dung, we should find that the barn manure would not last longer than that from the hog yard. If we put ten loads of materials into the yard for one hog, the manure will be weak; if we put but three or four, it will be good. It is best always to put in enough to absorb all the liquids. For each hog he would put in two or three loads as soon as the yard was cleaned out in the spring, and would add as much more at different times during the summer. If he wanted to put his hog manure on cold clay lands, he would put gravel into his hog yard.

Vegetable manures.—Many farmers miss it in not turning the sward often enough: much manure *grows* upon the land. But it will not grow upon the field for more than three or four years. This manure consists of the stubs, roots and leaves of the grass. There will be no more of it at the end of seven years, than at the end of four. Therefore if you do not plough up after mowing three or four years, you lose the opportunity of *making* in this way. The quantity of vegetable matter upon the acre is said to be about twelve tons.

A gentleman in his neighborhood, who is a good and successful farmer, puts half of his manure—the long manure—upon the sward, and turns it under. Manures also in the hill. Takes off the corn in autumn, harrows the ground, and puts in rye and hay seed. His crops of rye have been good, and his grass has done well.

Mr. Putnam (Editor) said the practice just described was such as he had followed for years. He turned down one half of his manure—the long manure—and let it remain there under sod for five or six years. The corn had done well—very well—and the grass (which he sowed among the corn in July,) had done well the first two years, and in the third and fourth held out better than it had ever done before on the same fields. This plan of turning half the manure under the sod, he liked on warm lands, but on cold ones he would keep it nearer the surface.

Mr. Buckminster would like to know what was the experience of farmers as to the comparative benefits of *spreading all* the manure for corn, and of putting a part in the hill. He used once to think that he could not bury his manure too deep, but he was mistaken. Has waited seven years to hear from some that he buried, but no accounts from it have yet been received. He thinks it better to form our manures into composts and keep it pretty near the surface.

Mr. Gardner, of Sekonk, said it is customary in his vicinity to spread part of the manure on the surface and plough it in—and to put part in the hill. The best farmers have been accustomed to do this, and by this process they obtain their best crops. The spreading of all the manure is now more common than formerly.

Mr. Putnam said he had made an experiment in 1839. Half the manure (4 cords per acre,) was turned under the sod. Then, on a part of the field, the remaining half of the manure was put in the hill; on another part the manure was spread on the surface of the furrows and harrowed in. The corn manured in the hill did best in June, was much the largest in the early part of July, but in October, the part where the manure was all spread gave 31 bushels, where that manured in the hill gave 30. Had he have judged by the eye, and with the impressions upon his mind made by the early part of the growth, he probably should have said that the part manured in the hill did best; but the half bushel told a different story.

Mr. Lathrop, of South Hadley, thinks the question, as to the proper *place* for the manure, turns upon the wetness or dryness of the soil. He would not manure in the hill on light lands, but he would on heavy. There can be no general rule.

He would advise every farmer to have his horse manure thrown into the hog yard; the hogs keep it from burning, and make it worth double what it would be if burned.

In his vicinity, much of the long manure is spread upon the mowing lands. These lands are also plastered, and then two good crops are taken from them each year. He alluded particularly to several lots of land which, thus treated, give four tons and more per acre, annually, for many successive years.

PARTICULAR RESULTS OF FARMING IN MASSACHUSETTS.

From Colman's Fourth Report of the Agriculture of Massachusetts.

Facts are in general so interesting and so important, that I am always desirous of recording them, leaving it to others to make such inferences from them as they may deem proper. My principal solicitude is, that they should be well attested, and of such a character as to suggest useful instruction to others. They are the only infallible teachers and their lessons cannot be controverted. It may be safely asserted that there is nothing which has been done which cannot be done again; and under the same circumstances and influences, the same results will follow. These

established truths render facts of so much importance, and make them the safest of all teachers.

Example 1.—Management of seven and a half acres of land in Northfield. The land is alluvial; of good quality; on the banks of the Connecticut.

In 1828, the land was leased; the proprietor to furnish fifty buck-loads of manure from his barn-yard; and to receive, as rent of the land, half of the whole product. He received half the top stalks, all the bottom stalks, and twenty-five bushels of corn per acre.

In 1839, the land was leased on the same terms, and he received as above the coarse fodder, and twenty-two and a half bushels of corn.

In 1830, the proprietor leased it for broom corn, and stipulated to deliver on the ground six loads of manure to the acre. The brush, prepared for market, one half the crop, which he received as rent, amounted to twenty-seven dollars per acre; price at which the brush sold in this case not ascertained.

In 1831, he leased it again for broom corn, delivering upon the land six loads of manure to the acre, at a cash rent of sixteen dollars per acre.

In 1832, without manure, he sowed it with oats, and obtained from thirty-three to thirty-five bushels to the acre, which he sold at forty-two cents per bushel.

In 1833, without manure, he obtained an average yield of twenty bushels of sound wheat to the acre, valued at one dollar fifty to one dollar seventy-five cents per bushel.

The land was valued at sixty dollars per acre; at which price, at that time, land of the same quality in the immediate vicinity was sold.

Summary per acre.

In 1828, 25 bushels of Indian corn, at 75 cts. per bushel,	$18 75
" 1829, 22½ do. do. do.	16 87½
" 1830, returns from broom corn sold,	27 00
" 1831, rent of land in cash,	16 00
" 1832, 24 bushels of oats, at 42 cents per bushel,	10 08
" 1833, 20 do. of wheat, at $1 50 cents,	30 00
	118 70½
Six years' interest upon 60 dollars, price per acre,	21 60
Net profit of six years upon each acre,	$97 10½

The manure was furnished on the farm, and the stalks and straw may be considered as a full equivalent for the manure, seed and thrashing.

2. Produce of three and a half acres of land in Deerfield street, in 1833.

Hay, 3½ tons, at 12 dollars per ton,	42 00
Winter wheat, 11 bushels, at $1 50 per bushel,	16 50
Stubble and clover, one ton, at 4 dollars per ton,	4 00
Corn fodder, three tons, valued at	10 00
Indian corn, one hundred and twenty bush. at 80 cts.	96 00
Potatoes, one hundred and seventeen bush. at 20 cts.	23 40
Apples, sixty bushels, at twelve and a half cents per bushel,	7 50
Pumpkins, one cart-load,	0 00
	$199 40

3. I give, in the subjoined case, the actual expenses of cultivating several lots of land on the same farm the same year, with the returns. The expenses include every thing until the delivery of crops in the barn, with the exception of thrashing the grain, and the interest upon the value of the land. I have myself affixed the value of the crops, as nearly as I could ascertain it at the prices then current in the county.

1. Four acres and 106 rods in Indian corn.

Whole expenses of cultivation,		$90 83
Returns—		
352 bush. of corn, at 75 cents,	264 00	
Corn fodder, ten tons, at $4	40 00	
		304 00

2. Three and a half acres in corn.

Whole expenses of cultivation,		109 75
Returns—		
Corn, 236½ bushels, at 75 cents per bushel,	177 37½	
Fodder, 9 tons, at 4 dollars,	36 00	
		213 37½

In the former case, gypsum and ashes only were used, charged at $5 50 cents; in the latter case, 35 loads of barn-manure were used, charged at one dollar per load.

3. Five acres in oats.

Expenses of cultivation and seed,		35 50
Returns—		
280 bushels oats, at 42 cents,	117 60	
Straw, say four tons, at $3	12 00	
		129 60

4. Five acres in rye.

Expenses and seed,		21 50
Returns—		
60 bushels, at one dollar per bushel,	60 00	
Straw, say four tons, at $3	12 00	
		72 00

5. Two and a half acres in winter wheat.

Expenses and seed,		13 75
Returns—		
20 bushels wheat, at $1 50,	30 00	
Straw, two tons, at 3 dollars,	6 00	
		36 00

6. Two and three-fourths acres in spring wheat.

Expenses of cultivation and seed,		15 58
Returns—		
38 bushels of wheat, at $1 50 cents per bushel,	57 00	
2 tons of straw, at 3 dollars,	6 00	
		63 00

7. Fourteen acres in grass, home lot.

Expenses of getting two crops, in both 45 tons,	65 00
Forty-five tons of hay, at 8 dollars per ton,	360 00

8. Seven and a half acres in grass, in meadow.

Expenses of getting the hay, 15 tons,	20 75
Value of the hay, 15 tons, at 8 dollars,	120 00

The foregoing may be considered as examples of extraordinary success. I give them as such. They are examples of extraordinary success and extraordinary skill and good management. The success is the result of the good management. The good management others can command; and consequently the same results are within their power. Men pretend that there is a great deal of "good luck" in these cases. There is very little of what may be termed good or bad luck in

this world's affairs, and these terms are mainly used to soothe a conscience troubled with a sense of its own recklessness, negligence or indolence.

INDIAN CORN FOR FODDER.

From the New Genesee Farmer.

The cultivation of Indian corn for fodder may be well recommended to the farmers, especially where pasturage is deficient, or in a season when the crop of hay is likely to be small. Among the farmers who supply the cities with milk, it is a favorite crop, and is given to their cows at night and morning to assist a short pasture. In such cases it is sowed at successive seasons, every week or fortnight, so that the crop may be coming on as needed. It is sometimes cut when it is knee-high, and then in general it will start a second time, so that another cutting may be obtained. This should not, however, be confidently relied upon. Where it is wanted for green feed, it is of course advisable not to cut it until the plant is in perfection; we do not mean until the seed is ripened, but until the leaves and stems are as abundant and large as they are likely to be; that is when the flower is protruded, and the ear formed, and yet no part of the plant has become too hard to be completely eaten up by the cattle. Every farmer, therefore, may make his calculation as to the time of planting. The earlier he plants, the sooner he will have the fodder and the more of it to give to his stock; and by planting at successive times according to his convenience, he may keep up a supply of succulent food to the very end of the season. None need be lost; and every leaf and stem of it should be saved, even after the frost has killed it.

We have seen the plant cultivated to great advantage for soiling cows; in many instances; in one where twenty cows were kept; in another where a hundred cows were soiled. In the latter case several acres were sown with corn for this purpose; and it was cut and brought into the barn as wanted. There was no feed of which the stock were more fond; none which produced more milk; and none obtained at a less expense. It was all cut short by a machine, and while gathered green every particle of it was consumed. When in the autumn it became dry it was steamed for the stock. Among the milk farmers, near the cities, its cultivation is constantly increasing.

We have known it likewise much used for store hogs. Where pasturage is deficient, or where they are kept in sties, no green food is more relished by them or more conducive to their thrift. In this case, however, it is of course given to them in a green and succulent state.

We have not known it cultivated extensively for winter fodder, but there is no reason why it should not be. In this case it would be desirable to sow it early, if we would have the largest crop, and let it come to what maturity it will. The value of well cured corn fodder for stock is settled. The cattle have determined the question long ago by the relish with which they eat it; and the good condition in which it keeps them. The amount of well dried corn fodder, including butts as well as tops, where the crop is fifty bushels, is generally estimated at two tons; this of the small yellow flint variety of corn; the southern gourd seed variety and the western corn produce a much larger amount. Farmers in general are disposed to estimate the fodder upon such an acre of corn, well saved, as equal, for any neat stock, to one ton of English hay. Some place it at one and a half ton; none lower than three fourths of a ton.

The only instance which has come within our knowledge, of ascertaining with any exactness the actual amount of fodder or stover upon an acre, was in Pennsylvania, where we infer the gourd seed variety was cultivated, and where the crop amounted to 66 bushels. In this case.

	Tons.	*cwt.*	*lbs.*
The blades, husks and tops, when cured, amounted to - -	1	6	13
Stalks and butts - - -	1	7	00
	2	13	13

How much could be obtained by sowing it exclusively for fodder, we have no means of determining with any accuracy.

Nor have we any certain prescription to give as to the amount of seed to be used for an acre; certainly not less than half a bushel, nor more than two bushels. Corn is a plant which, in rich soils, tillers abundantly or throws out many suckers, unless where it is very thickly sown, in which case it conforms to every other plant in its habits of growth, and runs up in a slender form like bushes in a thick swamp. Many persons advise to sow it broadcast, in which case it admits of no after cultivation; and the weeds, if the land is rich, will check its growth and fill the ground with their seeds. It is best to sow it in drills two feet apart, and quite thickly in the drills, scattering the seed over a space in the row, six inches or a foot in width. It may then be ploughed or passed through with a cultivator once at least; and in a measure kept clean from weeds. It is believed that as much fodder may in this way be obtained from an acre as if sown broadcast.

The land cannot be made too rich for it; and it need not be gathered until it is ripe. There may be a good many imperfect and some ripened ears among it; but the cattle will not like it the less on that account. The Irishman was asked how he kept his horse so sleek and fat; and "faith!" says honest Pat, "he has nothing but wheat straw, your honor, and that is not *half thrashed.*" It is a prevalent opinion that the top stalks of Indian corn when cut in a succulent state, and cured quite green, are better than when left to ripen. It is believed that this is an error; as the experience of observing farmers, we think, will show that their cattle do better, prefer them, give more milk and show better thrift, when fed upon the butt stalks, that is the leaves and husks upon the butts after the corn has been gathered, than upon the top stalks gathered and cured in a green state, as above described. The fodder need not then be harvested until it is, as it is termed, nearly dead ripe. Corn fodder when cut green, especially late in the season, is cured with great difficulty; but if left to stand until it is either killed by the frost or reaches maturity, it is as easily saved as hay. In putting away corn fodder, we have found it advantageous to insert, occasionally, layers of wheat straw. The sweet flavor of the corn fodder is communicated in some measure to the straw; and the straw serves to keep the

corn fodder from being injured by heating. No fodder suffers more or sooner from wet or rain than corn fodder. Every possible pains should, therefore, be taken to avoid this; and it is a good way to hang as much of our corn fodder, as we have room for, on the beams and on poles extending over the barn floors, and in sheds where it will be out of the reach of the cattle.

As to the kind of corn to be sown, the southern gourd-seed or the western corn, will undoubtedly give the largest weight; but much of it will be in the butt, no part of which will the cattle eat. Our common northern small flint corn will yield a large amount to the acre, as it will bear thick sowing; and the main stalk is not so large but that a good deal of it will be eaten, especially if cut up.

HABITS OF THE CURCULIO, AND MEANS FOR ITS DESTRUCTION.

From the Magazine of Horticulture.

The *curculio* is one of the greatest enemies of the plum; indeed, in many sections of the country, the whole crop is frequently swept off by its attacks. When its habits are well known, however, a little care will enable us to rid our gardens of this insect, so destructive to stone fruit.

The curculio is a winged insect, which emerges from the ground about the time when the trees are in blossom, and punctures the fruit almost as soon as it is formed, depositing its eggs in the tender skin of the swollen germ. When the fruit has reached one third of its size, if we observe it closely, we shall discover the scar of this puncture made by the insect, in the shape of a semi-circle or small crescent, about a tenth of an inch in breadth. The egg has now taken the larva form, and the latter is working its way gradually to the stone or kernel of the fruit; as soon as it reaches this point, the fruit falls from the tree, and the worm now leaves it in a few days, and finds its way into the loose soil beneath the tree. Here it remains until the ensuing season, when it emerges in a winged form, and having deposited its eggs to provide for the perpetuity of its species, perishes.

As it is found that the curculio, though a winged insect, is not a very migratory one, the means taken to destroy it in one garden are not without efficacy, though the neighboring orchards may not receive the same care. As the fruit, when it falls from the tree, contains the larva, it is evident that if we destroy it before the insect has time to find its way into the soil, we shall destroy, with it, the curculio. In small gardens, it is sufficient to gather all the fallen fruit every morning, during the period of its fall from the tree, and throw it in the hog-pens, when the whole will be speedily consumed. In larger orchards, where it is practicable, the hogs may (the trees being protected) be turned in for the short time in the season while the fruit is dropping, and they will most effectually destroy the whole race of insects of the current season. Indeed, in large plum orchards, this practice is found a very effectual remedy for the attacks of the curculio.

In small gardens that have come under our notice, formerly much troubled with the attacks of this insect, where the practice of gathering the fruit and destroying it daily for a short period has been pursued, the insect has failed to make its appearance after a couple of years, and the trees have borne abundant crops of fine fruit. In addition to this, we would recommend the application of clay about the roots of plum trees, in very light sandy soil.

It is sometimes the case that the plum will be many years in coming into bearing, where the richness of the soil induces too great a luxuriance of growth. When this is the case, the ground should be partially removed from the roots, which should be pruned or reduced in number one fifth or one fourth, and the soil replaced. This should be done in the autumn, and will rarely fail in bringing about a profusion of blossom buds and a good crop of fruit. A. J. DOWNING.

Newburgh, N. Y., Feb. 1842.

ROTATION OF CROPS.

To the Editor of the Farmers' Register.

Shirley, March 8th, 1842.

The interesting and well-written communication on the "rotation of crops," under the signature of N., in the February number of the Farmers' Register for 1842, reminds me (as I see he quotes my five-field rotation) that I ought in candor to acknowledge the change I have made in it, and the reasons for it; and while I do so, I must pay the tribute so justly due to the author of "Rivanna," in the February number of the Farmers' Register, 1840, for his better judgment in recommending his five-shift rotation in preference to the one I at first adopted.

In 1840 I changed my four-field system to a five-field one, viz.: wheat, corn, wheat, clover, clover pastured off; but I found, the very first year, after grazing the second year's clover field heavily, to remedy insects, in consequence of the dry fall, it was almost impracticable to fallow it up for wheat. And as we generally have dry seasons at that time, it makes an insuperable objection to the system, for the labor of fallowing up a hard trampled field, in a dry season (the land breaking up in large clods, which clods have to be reduced by the rollers, harrows, hoes, &c.) is immense, on our stiff James river lands, and makes it insuperably objectionable. The crop of wheat succeeding, though, was very fine, the straw immense, and, where it did not lodge, very fine grain. I therefore last year changed the rotation to the one recommended so highly by Rivanna as the "beau ideal" of a system, viz.: corn, wheat, clover, wheat, clover, and have no doubt I shall find it a good one from the recommendation of such able authority. But I think if my lands had been as light and rolling as the author of N. describes his to be, I should have preferred the other five-field rotation, viz.: two years in clover before fallowing for wheat; as I consider it very important, from my late experience, that land should lie out longer in grass than one year. It is the great defect, I think, in our systems on James river, that the land does not lie out long enough in grass to resuscitate. With light land, such as N. describes his to be, the fallowing for wheat would never be very laborious; for light land never becomes very hard, however dry the season may be, and may be fallowed with ease, and I think with success, after two years in clover, the first,

allowed to fall and rot on the ground, as a manuring, and the second year pastured off, to leave a clean rich turf for wheat. The pasturing would certainly benefit light land very much, for trampling is very necessary to it to make wheat or clover. In fact white clover will not succeed on any land without trampling, and red clover is very much of the same nature, though not to the same degree. His land being rolling, would only have one hoe or washing crop in five years, and that would not wash it much when he leaves out a part through the winter for oats, provided he lays by his corn early, and lets it get grassy, to cover the land during winter, with the dry crop grass, and none the less corn would he make for it, as I believe there is more corn lost than made by late working.

I think there are some objections to Rivanna's system, as I propose to practise it. First, when you do not graze the clover at all, which is to be fallowed for wheat, as is my intention, and turn in all the clover, it is very difficult and tedious to plough, chokes the ploughs, and makes bad and slow work; and again, after a heavy crop of wheat on clover fallow, your clover is apt to fail from the wheat lodging, and killing the young clover, and then you have a bad pasture for the next year for your stock. The first objection Rivanna remedies by partial grazing; but that I do not wish to do, as I think it very important in the four or five-shift system either, to return all of the clover to the land in one of the years at least, and should prefer to encounter the trouble of turning in the clover to robbing the land of it; for however much the two systems have been lauded, I think there is very little doubt they are sufficiently exhausting on most of our Virginia lands to require all the clover once in the course of the rotation to resuscitate them; though with that, and the manure of the farm, I think good land will improve sufficiently fast for any reasonable man; and with the addition of marl, or lime, will improve very fast.

Another objection with me to Rivanna's partial grazing both clover fields, instead of rigidly grazing the pasture one only—it would defeat the chief object I had in view in changing my system from four to five fields, viz., remedying the insects in my land by grazing, in which I have great confidence.

Thus far I am very well pleased with Rivanna's rotation. Last year, (1841,) I had a very good clover pasture after the fallow wheat of the year before, and it stood the grazing admirably well, (having 80 head of cattle, 100 sheep, 100 hogs, including pigs, and occasionally 20 horses and mules, on 160 acres, very nearly two head to an acre,) and the grazing made this winter's ploughing for corn very good, as trampling makes winter ploughing easier, instead of rendering it more difficult, as it does summer fallowing for wheat. I have a very fine promise for pasture this coming summer, from last year's fallow wheat, and if I can only continue to have good pasture every year from the clover of the succeeding year after the fallow wheat, I shall be very well satisfied with the system.

I ought to mention that I only sow the cornfield wheat in clover, relying on the volunteer clover on the fallow wheat for the next year's pasture, which I suppose is the practice of Rivanna and all others who pursue his system, as there is generally plenty of volunteer clover on the fallow wheat, though I have always remarked that it was much less apt to turn out a good clover field than the corn-land wheat, sown in clover, owing to the lodging of the fallow more than the cornfield wheat, and also to the corn-land being much cleaner, as foul land is a great enemy to clover.

My system will vary somewhat from Rivanna's. Mine will be corn, wheat, clover, wheat, clover pasture heavily grazed, to go in corn again at the beginning of the next rotation. His is, corn, wheat, clover partially grazed, wheat, clover partially grazed, to go in corn again at the beginning of the next rotation. My object is, by heavily grazing to try to remedy the innumerable insects the clover has introduced in my land, such as clover worm, cut worm, wire worm, and all the variety of grubs we have in this country, which render it so difficult to pitch a crop of corn, and sometimes a crop of wheat too. For sometimes in the fall I have had my wheat very much injured by a little worm, resembling the wire worm, (which does so much injury to corn,) only a little shorter, which I called clover worm, from finding it in the clover fallow wheat, and not in the cornfield wheat at all. HILL CARTER.

THE ADVANTAGES OF THE CLIMATE OF THE UNITED STATES OVER THAT OF ENGLAND.

From the New Genesee Farmer.

Your correspondent, W. Garbutt, of Wheatland, gives to the English farmer the advantage in length of season over the farmer of the United States, without even adverting to the very great advantage we have, in the superior stimulating power of our much warmer and more kindly season of vegetation. If by some change in the solar system, the power of terrestrial magnetism, or some involution in nature's course, the soil of England could be so far stimulated by the sun's rays as to produce Indian corn to perfection, should we any longer hear of her "starving population," reduced to live on the miserable bread made of damp mouldy grain? It is true that England has less severe cold weather and a shorter winter than we have; but look at the slow process of vegetation there as compared with that of the United States; her late harvest crowded into the short, cloudy, and even wet days of autumn, and it is not surprising that her corn is damp and mouldy. What would become of our ease-loving farmers if they had to encounter the cold, sour, wet climate, and slow vegetation of that country called merry, not sunny, England? Would they not be reduced from bacon and corn bread, to turnips and pea soup, from the delicious wheaten loaf and hot rolls, to oat cakes and potato broth?

Mr. Garbutt says that roots cannot be cultivated in this country to the same extent, *advantageously*, as in England. Very true, but then does not our Indian corn, that thrifty precocious king of edibles, (it being both food and fodder, oil and sugar,) render the like extensive cultivation of roots unnecessary? But we deny that roots may not be as easily cultivated in the United States as in England. If our more sunny champaign country is not as well suited to the turnip and potato, as cool and

misty England,—our early planted sugar beets never grew in greater perfection with us, than during the last summer, the hottest and driest season we have had in many years; and there is little doubt but that one acre of sugar beets is worth two acres of turnips.

We fully agree with Mr. Garbutt that it would be folly for our farmers to follow the rural economy of England in all its variety, but for very different reasons than a part of those set out in his otherwise interesting and well written article.

Waterloo, N. Y. S. W.

ADDRESS TO THE KANAWHA, MASON, AND CABELL AGRICULTURAL SOCIETY. GUYANDOTTE, Nov. 11, 1841.

By Gen. Peter H. Steenbergen, of Mason county.

Gentlemen of the Agricultural Society:—Another year has rolled on, and we are once more assembled under the rules of our organization. The spirit and feeling of its members present, together with the exhibitions on this occasion, will show whether it has been productive of all the advantages so earnestly desired by its formation.

Whatever of success and prosperity such institutions are calculated to insure will depend much upon the zeal, energy and indomitable perseverance of all who belong to the society. We should permit no trivial circumstance to delay us from promptly fulfilling the duties incident to our situation; suffer no rivalry for the prizes to estrange, or engender unpleasant feelings in their distribution. We should move on in peace and harmony, combined as brother farmers embarked in one common cause, and sailing under the flag of improvement.

It is difficult for me to determine what topic would be most acceptable to the majority of my friends present. This being the first meeting held in your county, and its good effects, if any, intended for your improvement, I have thought it best to take a review of some peculiarities existing in your soil, some causes operating to your benefit or injury, and thus correctness and truth will be equally applicable to all sections placed under similar circumstances. With your lands I am well acquainted. I will now notice the various shades and character of soil that your large county furnishes; and in doing so I beg of you to believe, that whatever remarks I may make are predicated upon a judgment matured and formed by a comparison of this section with that of others in our country.

Commencing then at this place, the town of Guyandotte, and descending the river, you are first struck with the infinite variety of soil your bottoms afford; first alluvial, then an elevated table of sandy land, and sunken ponds resting on a substratum of clay impervious to water. The uplands bordering on these are of excellent quality for grass or small grain. In what way can the owners of such various grades of soil best improve them? How should they be managed? How can their fertility be most readily increased?

I will notice them in the order named—Alluvial, first in character and value, resting on the river front and extending to the wet land or slash. This is the most easily reclaimed if exhausted by cultivation. Nothing more is required than deep ploughing and grass. Sow heavily with clover, graze lightly, and use the scythe to prevent weeds from maturing. Feed hay, cornstalks or straw on it, and you will soon recover all its lost fertility. Your wet land presents two varieties, the one an open prairie pond, originally covered with water, the other clothed with timber. I believe the art of man has never yet invented any means of rendering such lands available to useful purposes without first draining. Water impoverishes as rapidly as cultivation. In vain will you look for the healthy action of plants on land saturated with water, or reap the ameliorating influence of frosts in pulverizing your soil and adapting it to the growth of vegetables.

Such land in every instance should be well drained, by either open or secret ditches, using such as your resources will most readily command. If only thrown up in beds in the direction of the slope, and the centre furrows well cleared, the surface water will pass off, adding much to the value and production of the lands.

Your open prairie ponds are exceedingly rich, abounding in vegetable matter, and, when thoroughly drained and acted on by the sun and frost, will yield most abundantly. I am convinced that the surface of all wet lands, when reclaimed, sinks, and these ponds more than any other, occasioned by a greater decomposition on their exposure to the atmosphere. Hence open ditches, that when first cut answered the purpose, will have repeatedly to be deepened as your land settles; for you need expect no permanent improvement until you have thoroughly commanded the water.

On the subject of wet land, and the great importance of thorough draining, I have never seen a better illustration of its happy effects, than an anecdote given by the late Judge Buel. "An acquaintance called upon a Scotch farmer, whose farm had been under-drained, and being informed that the improvement cost sixteen dollars an acre, till having been used, remarked that it was a costly improvement. 'Yes,' was the farmer's reply, 'but it cost a deal mair *not to do it!*' which he illustrated by pointing to an adjoining farm, like situated, which had not been drained, and was overgrown with rushes and sedgegrass, and then to his own fields teeming with luxuriance and rich in the indications of an abundant harvest."

Those elevated tables of sandy land, so common to the Ohio, many of which now look like the sterile and worn out fields of the lower part of the state, have once, as I have often been informed by the first settlers, been the most beautiful part of all our bottoms. Before the hand of man had thrown them open to the sun, they were carpeted with wild grass and pea vines, looking like some splendid park, with all its undergrowth removed, well stocked with deer. Settlements commenced, those lands were soon cleared; but the constant and immense demands for grain to supply the Kentucky drovers, impelled their owners to the ruinous practice of repeated and continued corn raising, until they have nearly exhausted the whole life blood from them, and will now require that mode of treatment which modern

science in improvement has taught will successfully reclaim their fertility.

I labored under a strange delusion when I first settled in this country. We have lands on our farm exactly similar to those I am now describing, and we then believed them almost useless, that in consequence of their open sandy character nothing could be done to restore them, where once exhausted, or even to make tolerable crops, when first cleared and brought into active use.

The best plan that I can devise for the benefit of the owners of such property, is to give our own experience, when placed exactly under similar circumstances.

I vouch for the accuracy of every statement here made, and would thank gentlemen to call on us and have an ocular demonstration of its correctness. When my connexion, Mr. Beale, first got possession of his farm, a tenant had previously cleared about thirty acres of his sandy land, and had then absolutely worn it out, the last crop of rye he sowed producing less than five bushels to the acre. The whole of this field was covered with running, and the fence corners filled with standing, briers; not one single spear of grass sprung up or made its appearance on any part of the improvements. He then possessed no other cleared land, all the balance of his estate being an entire forest. On this spot he placed his dwelling. And then the question arose with him, what was the first move to restore the fertility of this land? How shall I accomplish it? Where are my resources of manure to come from? The balance of my land is in woods, and I must make this land, by its own recuperative energy, spring into life and usefulness again.

He commenced operations by applying his strong horses to a good plough obtained from Pittsburgh, and breaking the soil deeper than ever his tenant had previously ploughed, sowed small grain in September with clover and timothy. Yes, timothy on that poor sand bank! Most of the seed grew. A sorry crop of grain followed of course, but his grass seed had fortunately taken well, and in that he saw the germ of future fertility. It was lightly grazed the first year; the scythe applied to the briers in August. His stock added by their droppings a powerful auxiliary well prepared.

That grass remained three years, subject to the same treatment, and was then turned under. A wheat crop followed, that, I well recollect, was abundant. Clover and timothy were again sown, with some green-sward that he obtained from Kentucky. By this time he had cleared some of his front bottoms, and commenced feeding his fodder from them on those exhausted fields, now well set in sod. This process of feeding in the winter, and mowing any briers or weeds that spring up in the summer, was continued until he left our country and passed his estate to his son. At that time those exhausted sandy fields were brought to such a state of fertility, that the green-sward had taken entire possession of all the clover and timothy, and was seen lodging in all directions over the field, having eradicated entirely the briers, leaving not one stalk as a memorial of its former desolation.

Now for the benefits and subsequent profits that his son has been enabled to enjoy, from the admirable course of treatment formerly given to this land. He ploughed all up, and took two successive crops of corn, each averaging at least fifty bushels to the acre. It was then sown in wheat, clover and timothy, giving a good yield of wheat, and taking well in grass, remaining but one year in sod, his fat cattle being fed on it in the winter. It was again turned over, and two more successive crops of corn, equally good, followed by wheat and grass. Continuing two years and fed on in the winter as usual, he last spring ploughed again for corn, and has at this time a crop almost sufficient to take the premium to be awarded on this occasion, at a minimum of one hundred bushels to the acre.

I must explain, that although the measurement has been made in the field of this sandy land, yet the spot measured for the premium was naturally richer ground than the general average of the remaining portion: but I have no hesitation in asserting, that at this moment, on an average square acre of land in the lot so previously exhausted, there is standing at least sixty bushels of corn to the acre.

You will observe by this statement, that after the renovation of the sand, six crops, of grain, (four of corn and two of wheat,) have been taken in seven successive years. Then follows three years in grass, and thus it is now again in corn, clothed with the best crop it has ever produced.

What think you now of worn out sandy lands? Do you believe you possess any more completely prostrated than that I have accurately described above? Are you willing to enter upon the career of improvement? If you are, here then is an example worthy your imitation, fear not the result. You have seen what judgment and preseverance has accomplished.

While on this subject, I will state another experiment now in operation on exactly a similar character of land. The growth was all black oak and hickory, the ground so porous and sandy, that in early times I have frequently taken my ramrod from my rifle and without difficulty thrust the whole in the earth. How would you undertake to make such soil yield its hundreds? Now for the process. The timber was all killed, the undergrowth taken out, sowed in grass seed and ripe hay fed over the whole, to form a good sod immediately. The land was then grazed with cattle, and fed over occasionally during the winters. In six years succeeding the girdling, when after the bark and brush had been principally torn off by the storms and trod in pieces under the feet of the cattle, all the standing timber was cut down and burned, and the whole mass of vegetable matter thus collected and now nearly decomposed, turned in with the sod last year.

What think you was the average yield of the first crop? I am sure at least sixty bushels to the acre. Hogs were then turned in, and consumed the standing corn on the field. The balance of the winter and part of the spring fattening cattle were fed on the same lot with cut up corn and fodder until the earth was nearly covered over with litter. All was again this season turned under, and at this moment there stands upon it a crop of corn, some shocks of which have been husked, showing a yield of upwards of seventy bushels to the acre. The same process is again

to be applied the ensuing winter, with this difference, that in the present year, the corn has been cut up and will now have to be removed and consumed on grass land adjoining, the cattle will then be put on, and other corn and fodder brought and fed in the same place. There are two lots of ten acres each of that character of land, kept as winter and spring feeding lots. It is intended to try fairly the experiment, whether they will not produce corn every year in succession, and continue to increase in fertility while under that course of management. Sandy land is well known to improve under the operation of treading, it compacts the soil, rendered more tenacious: and what would succeed with it, is death to clay, making it utterly useless until pulverized by frost.

I have made this statement for the sole purpose of bringing into public view, the true value of that character of land when judiciously managed.

I am not the operator; it has passed under my own eyes, and I only claim to have aided by frequent consultation in the first successful experiment, that once accomplished gave the key to the subsequent course now in progress of execution, the result of which you will learn at some future time.

There is below here, as well as in our own county, a large body of similar land, and wherever there is a connexion with some rich alluvial front bottom, you have the means at command to restore its original fertility. Our best lands, as before remarked, possess within themselves the germ of their own restoration; you gain it by deep ploughing, followed by grass. All their production should be removed and consumed on your secondary soil. You will then observe with pleasure the great advantage a small covering in winter will produce in succeeding crops, and the efficient aid it furnishes to enable grass to take root. Once obtain this powerful auxiliary in restoring exhausted, or retaining the virtue of rich soil, and time and judgment will accomplish all your require.

There is on every farm some peculiarity of soil and position, an endless change and variety of circumstances, daily requiring the use of skill and experience to convert them to practical benefit. I would therefore recommend, that the farming publications should be taken by every man who expects to make his living or his fortune by the cultivation of the earth, for through them he will gain the first requisite of his profession, food for reflection, deep reflection, seeking cause from effects.

My intercourse heretofore, with other parts of your county, enables me to sketch some of the prominent features of its soil and character. Pursuing our way to the south part, I find the lands on the various forks of the Twelve Pole, and particularly that portion about the divide of the sandy waters, well adapted to farming purposes. It may rank high as a grazing country, whenever the present occupants shall cease their scourging operations of raising corn on hill sides, and convert them into blooming luxuriant pastures.

There is no better index to the farming pursuits of a country, than is evidenced by the character of their stock thrown into market. In early times, the mountain range was the beneficent resort of all, and is now nearly exhausted, still no preparations have been made for pastures to take its place. Hence, every succeeding year the stock decreases in size, and will continue to depreciate until a new era shall cover every hill and every hollow with teeming grass for their support. Your soil and advantages will justify these remarks, and for the evidence of its practicability and success I may refer you to your neighbors in Kentucky.

In examining the Guyandotte and some of its tributaries, I find that its bottoms have been exceedingly rich and productive, but that the same temptation to over cropping in corn, occasioned by the high prices obtained on the road, could not be resisted, and they have continued the suicidal policy of corn after corn in rapid succession, until they are now left with a diminished return of scarce half its original production.

Can it be good policy in any farmer thus to persist in an operation, that yearly lessens the remuneration of labor? I should think not. How will you remedy the evil? What course of husbandry should be adopted?

Some will contend that it is necessary to keep all their good land in corn, and that, even, if only one third should be laid down in grass for improvement, the balance will not yield sufficient for their consumption. Can you think of no plan to save this depreciation for a year or more; or to stimulate the two thirds in cultivation to produce what you now gather from the whole?

Reflect, have you no manure at command? Is there none to be obtained in this village? Can you not quantity the amount in your barn yard, sufficient to cover over one half of your corn land? And if thus enriched and well cultivated, may you not reasonably expect a return adequate to your demands, while your grass is restoring the balance.

A Pennsylvania German, or perhaps an eastern farmer, would find a resource in the alluvial deposite on your banks, which when applied to his corn land would keep up its fertility, until time was gained on the other for its restoration by grass. The tributary Mud river has suffered much from the same course of management, and its fertility materially affected from similiar causes. I saw there, in several places immense amounts of rich alluvial deposite, which if properly applied would be held in high estimation.

Pursuing the road through Teay's Valley, it presents some singular geological features, and were I now in search of hypothesis and proof to sustain the igneous action of the Huttonian theory, from the energy of internal fire and upheavings of the crust of the earth, I know no place near us that affords a finer field for the display of the imagination, or that presents stronger evidences of some great and wonderful alteration from its original position. How shall we account for the river rocks, rounded by attrition, imbedded in sand and pebbles, placed on an elevation two hundred feet above the level of the Ohio? How for the stratified rocks changing their angle of inclination? The inference is irresistible, that it has at some period been the bed of a lake or river, and that some convulsion has raised the earth and compelled the water to seek its course to the ocean through other channels. But enough of this; my business is with the surface as now existing, and

the use to which its occupants are converting it.

This valley on its first settlement must have presented a beautiful and attractive appearance. It abounds in springs, is gently undulating, only swelling in vales sufficient to carry off its redundant waters. Here too are seen the evil effects of severe cropping, reducing parts to an almost hopeless waste; but the hand of desolation will be arrested, for the march of improvement is onward and progressing. The attention of the traveller in passing is arrested by the evidence of what zeal and energy can accomplish. A worthy and enterprising member of our society, recoiling from the desolating course of his predecessors, and bursting through the shackles of an exploded system, has set an example of improvement that well entitles him to be hailed as a friend to the best interests of his country. I hope no apology is needed for this public expression of my approbation where I think it so justly deserved. There has been another example of successful improvement in the upper part of the valley, on a different character of soil, that was much admired for a period, until finally blighted and extinguished.

A gentleman, now a resident of Mason and then the owner of that estate, who was remarkable for his energy and industry, was the first to clothe a naked soil in all the blushing glory of rank and luxuriant clover.

He sold the property, and since then other councils and other plans have been pursued. I lately passed by that estate, and really it seemed to me, that some southern sirocco had swept over it, its devastating influence, withering and parching out every vestige of that beauty, which was the delight and admiration of all who saw it. I have now taken a cursory view of parts of your county, pointed out some facilities at your command for its improvement, and would finally say to those who are reviving their exhausted lands by grass—go on, increase the quantity sown until you cover all not required for the plough. Your example will eventually be followed by those who are desirous to share with you the rich reward you will certainly reap. Continue to inclose your wood land—cut out the under brush, sow it thick with seed. A good example is furnished you, by a countyman, a spirited member of our society, who has now thousands under fence, and every revolving year is adding to his almost unlimited means for extension.

A LIST OF PREMIUMS

Awarded at the annual meeting of the Mason, Cabell and Kanawha Agricultural Society, held in the town of Guyandotte, on Thursday, the 11th November, 1841.

To Gen. P. H. Steenbergen, bull *Rockingham*, Durham,	$20 00
James Shelton, 1 year old bull	8 00
Dr. Benjamin Brown, bull calf	5 00
George Moore, cow	10 00
Sampson Landers, 2 year old heifer	5 00
Washington Shelton, 1 year old heifer	5 00
John Morriss, stallion [by Greybeard]	10 00
James Y. Quarrier, 2 year old colt Prince Albert	7 50
Dr. Benjamin Brown, 1 year old colt by Sir William	5 00
J. Y. Quarrier, brood mare, dam of P. Albert	7 50
John Morriss, sucking colt by Young Grayb'd	5 00
Roman Manager, Berkshire boar	5 00
A. L. Doolittle do sow	5 00
Joseph Nagle, ram, Bridgewater	5 00
do ewe do	5 00
John Capehart, acre of corn, 114 bushels 7 qts*	25 00
John Morriss, acre of meadow, 6482 lbs. timothy,	10 00
John Capehart, best sample tobacco, (very good)	10 00
Mrs. Frances Moore, of Mason, domestic carpet	10 00
Mrs. Lucy Matthews, of Kan'a, rag carpet	5 00
Mrs. Sarah Doolittle, of Cabell, pair blankets	5 00
Mrs. Frances Moore, of Mason, piece of flannel	5 00
do do piece of jeanes	5 00
do do fancy bedquilt	5 00
Miss Olivia Holdridge, of Cabell, silk stockings	2 50

Articles for which premiums were not previously awarded, but pronounced by the judges highly deserving attention:

Mrs. Lucy Matthews, a very fine silk shawl, grown, spun, and manufactured by herself.

Miss Abigail S. Adam, of Cabell, a rich hearth rug and 2d best quilt.

Miss Sarah Poor, of Cabell, a fine woollen shawl, 5.4 square.

Mrs. Sarah Couch, of Mason, a rich toilet cover.

Miss Johanette Magnes, of Cabell, four infant net caps, very rich; and best piece of cotton hose.

Miss Leonora Chapman, of Cabell, the best specimen of sowing silk.

Mrs. Mary A. Nixon, of Cabell, a very fine palm leaf hat.

Ambrose L. Doolittle, three barrels cocoons.

Miss Julia A. Wright, of Cabell, presented a very fine speciman of race ginger cultivated by herself.

SILK CULTURE IN EAST TENNESSEE.

From the Tennessee Agriculturist.

The following extract handed us by a friend, from the most experienced silk culturist in Tennessee, we hope will be interesting to many of our readers:

Rotherwood, January 4th, 1842.

Dear sir:—In reply to your questions on the progress of the silk culture, &c., I remark, that notwithstanding the gloomy aspect of moneyed matters for some time past has deterred from all adventure, the silk business is now in a fairer

---

*There were three other competitors for this premium: Samuel L. Alexander produced evidence of having raised 112 bushels to the acre; Charles Beale 101½, and Morgan Moore 100.

way of success than at any former period. I have bought between $1500 and $2000 worth of cocoons the last year, and have reeled between 300 and 400 pounds of silk, which I have sent to Philadelphia, and am now waiting the result of sales of a large part recently sent. The feeding of worms the last season in East Tennessee was highly encouraging, although there were some failures. I have now no doubt of its being a branch of agriculture with us of no small ultimate importance. I was not so successful in feeding as some of my neighbors, owing I think principally to the dampness of the dirt floor to my shed. I have tried Mr. Morris' plan. There is nothing essentially new in it, and I do not like it. I have no idea of its general adoption. I have tried many ways of feeding and am not yet decided which is the best of several. I am rather in favor of the Turkish mode, viz: to feed with the branches piled on, the higher the better, never clean at all, and permit the worms to spin in the branches. This I believe the cheapest way. The cocoons are equally good and the fixtures of trifling cost. Indeed the floor may do for the first shelf. I ought to say, however, that the most successful feeding last season was on solid shelves and with the plucked leaf. I do not deem the question settled between these modes; because the Turkish plan has not been as fairly tested as the other. You can obtain peanut eggs of the best variety next spring by writing to me. Price I suppose about $5. Yours, respectfully,

FREDERICK A. ROSS.

AN ESSAY ON GRASS CULTURE.

For the Farmers' Register.

The cultivation of the grasses has but recently received much attention, in what is usually called eastern or lower Virginia. In this section of country, almost the sole dependence for provender has been on the offal of corn. Indeed the general opinion, until within a few years past, has been, that the grasses would not succeed well among us. How this opinion became so general, and why it was so long continued, I am at a loss to conjecture; for it is a fact, that in this portion of country there are vast quantities of land admirably adapted to this crop, whilst at the same time they will produce no other. Such lands have therefore hitherto been useless and worse than useless; for instead of adding to the value of our farms, they have only marred their beauty, and furnished so many eye-sores on the same. Of this kind were all the spring branches, and other streams, and marshes and low sunken places, which were permitted to remain in a state of nature, and to luxuriate in all the varieties of their own spontaneous productions. It seems never to have occurred to our worthy ancestors that, simply by ditching these places, the superfluous waters might be drawn off and in this manner rendered the most beautiful and valuable portions of their farms: but the son received the estate, just as it was transmitted to him by his father, and he in his turn, left it to his son in all its natural deformity.

But I am happy to say, that a spirit of improvement begins now to manifest itself among us. Whether it is that the high lands are so exhausted, that they will no longer furnish a support, or that an unwonted impulse has been given to this matter by means of agricultural societies and agricultural publications, the fact is that a great change has taken place for the better. People now begin to feel and to appreciate the value of grass crops; and they will admit that they never knew what it was to live in plenty and comfort, till they had an abundance of hay for their stock. Instead therefore of long lines of unreclaimed land on both sides of streams, instead of large bodies of sunken land covered with stagnant waters, sending forth pestilence and death every fall, these unsightly places are reduced to beauty and order. The water which was formerly permitted to spread abroad, the habitation of filth and disease, is now restrained in narrow ditches; and the lands which once produced nothing but bulrushes and other pests are now covered with rich crops of nutritious grasses. This beautiful state of things, I am sorry to say, is as yet just in its embryo among us. Much, very much, remains yet to be done. A few enterprising individuals, scattered here and there, in our widely extended waste, have showed this noble example. A mere *beginning* however has as yet been effected, whilst thousands and tens of thousands of acres are still in all their natural deformity. It is with the view of correcting this great and sore evil, that I write this essay; and if by means of it one single ditch is dug, or a single acre is reclaimed and brought into successful cultivation, I shall feel myself amply compensated for my trouble.

With these introductory remarks, I proceed to consider,

1st. Which of the various grasses it is most expedient to cultivate; and,

2d. The peculiar cultivation which experience shows is best adapted to success in this crop.

Of grasses there are a great many varieties, amounting to some hundreds and perhaps thousands. It is not my object to ascertain their precise number; nor is it my intention to present the few that I shall notice under their various botanic names. In fact, I intend this as a simple plain treatise, which, by the use of common names and the most common language, will be perfectly intelligible to every one.

It will be conceded on all hands, that of the very great variety of grasses, comparatively very few are of any special value. The great majority of them, however important to cover the land, and to furnish food in their tender state, are of no value whatever as a crop. Indeed most of them can be regarded in no other light than as mere pests, and therefore are to be ranked among thorns, briers and thistles, with which the earth was cursed, in punishment for the sins of mankind. These are so well known, that I consider it wholly unnecessary to point them out. But among the numerous family of grasses there are a few which, upon trial, are found to be of very great value. Of these, the common red clover deservedly claims the first rank. This grass is especially valuable on several accounts. When properly managed (of which more hereafter) it certainly makes a most nutritious hay, of which stock of every kind are very fond, and on which they thrive remarkably well. In addi-

tion to this, it is found to be the very best enricher of land when turned in, in a green state. All crops thrive well on a clover lay. The best crops of wheat and corn are uniformly taken from the clover fields. Indeed, the farmer considers his work as pretty well done when he can get his land in a state to produce clover freely. It not only throws forth large quantities of nutritious stems and leaves, but each plant has a long tap root, which penetrates to a great depth; so that the whole land, both above and below the surface, is completely occupied with it, and many are of the opinion, that the root contributes as much nutriment to the land as the top. This grass is rendered, in many situations, especially above tide-water, vastly more luxuriant by applications of small quantities of gypsum. Two or three bushels to the acre, applied in early spring, are often found greatly to increase the crop. In eastern Virginia, however, lime or marl, or ashes, is a much safer reliance. If alkalies be present in sufficient quantities, it will succeed well in almost any soil, except it be too wet, and when it has taken a firm hold, it is almost impossible to eradicate it. I have known seeds to vegetate after they have lain dormant at least ten years in the land. One sowing on good land, kept in a state of constant fertility, is ordinarily sufficient for all time.

The next grass which I propose to consider is what is commonly called the Kentucky blue grass. No doubt seems now to exist, that this grass is identically the same with that which abounds so much in all rich soils, throughout our whole state, and is known among us by the common name of green-sward or blue grass. There is however a difference, between these two grasses; but it requires a botanist to point it out. In a practical treatise of this kind, this difference is of very little consequence.

This grass, to the western farmer, is of immense importance, not on account of the crops of hay which it yields, but the rich pasturage which it furnishes. It is indeed one chief source of the western man's wealth. The time has been when New England was considered the best grazing country in America. The best cattle were found there, and large numbers of mules were exported to the West Indies. But since the introduction of this grass into the west, Kentucky and Ohio have evidently taken the lead. There is no doubt that these two states now furnish a larger number of fine animals than any other section of our country. Large numbers of horses and mules, great droves of cattle, and still greater droves of hogs, are driven every year from those states to find a market in the east. And all these animals depend, in a great measure, upon this rich nutritious grass.

And here it is a subject of interesting inquiry, may not this rich grass be turned to a profitable account among us also? It has already been remarked, that it grows every where in our state. I have seen it on the mountain top, and in the valley below. It succeeds well in all rich soils, both above and below tide-water. A fertile soil then is the only thing that is wanting to ensure success. Now it has occurred to me, that those farmers who have more land than they can cultivate (and great multitudes are in this situation) might turn their superfluous lands to great profit, by getting them well set in this grass. If the means exist, the process is a very simple one; and if the means do not exist, no farmer ought to rest satisfied till he has them. But it is not my intention to enter on that broad and extensive subject involved in the improvement of land. I would simply observe, that where marl exists, (and it abounds almost every where in lower Virginia,) stop up the gullies, if there are any, grub up the young pines and other rubbish that has taken possession of the worn out old fields; plough *deeply*, then cast on the marl; sow clover seed and harrow them in, and a foundation is at once laid for improvement. In two years, the clover will in a great measure disappear, and the green-sward will begin to take its place. The probability is that in many parts of the field there will be neither clover nor green-sward. Such places require further aid. But by persevering in this course, the whole field may ultimately be reduced to fertility and beauty, and in time the whole farm may be greatly improved.

But what is to be done when marl cannot be procured, and where the crops require all the manure that can be commanded? The only remedy in this case is *to make more manure*. Nor let any one say that this is impracticable. I venture to affirm, that not one in fifty among us makes *half* as much manure as he might and ought to make. The plan is simply this: increase your crops; this will enable you to increase your stock, and then a foundation is laid for increased manures.

It will be perceived that the above remarks apply only to those who have superfluous lands. It is obvious that all such lands are vastly more valuable in pasture, than to remain as exhausted old fields.

But in this section of country, and especially in the neighborhood of our towns and cities, there are also many small farms. Here it would be very bad policy to devote much if any of our lands to mere grazing; and here the green-sward, instead of being a blessing, is a mere pest. In all *tillage* lands, as a general rule, it is an unwelcome visitant. This is particularly the case in all the meadows in which we wish to cultivate the artificial grasses. There it is one of our greatest plagues, for such is the tenacity of its hold, and such is the rapidity with which it spreads, that it speedily displaces every thing before it. But as a mere pasture grass, I believe that its equal, both in firmness of sod, and richness of nutriment, is not to be found in the whole catalogue of grasses.

Some time ago I was much amused, and I hope profited, in looking over an analysis of the grasses made by Dr. Darlington, of Pennsylvania, in which he gives the first rank in point of nutriment to the Kentucky blue grass. Next in order he places what we call timothy, but in New York, and east of it, it is called herds-grass. This is certainly one of our most valuable grasses. None is more certain to vegetate when the seeds are good, and proper care is taken in the preparation of the land, nor is there any that comes to a more speedy maturity. If sowed in the fall, say in September, on good land, it commonly produces a good crop the next season. It may also be sown in the spring, but then it will not produce a crop until the next July twelve months. There

is however some economy in this, for an intermediate crop of oats may be taken from the same land. But the spring sowing, especially if the summer should be hot and dry, I have more than once found a precarious dependence. The fall sowing is upon the whole rather to be relied on.

Herds-grass, called red top at the north, is slower in its growth. It requires a longer time than timothy in taking a firm hold on the land, but when once well set is more hardy, and will ultimately dislodge it. It may also be sown in lower and wetter land, and will maintain a longer struggle with blue grass, broom straw, and other pests. My practice has therefore been to sow a mixture of these two grasses, say two-thirds in measure of timothy to one-third of herds-grass. The result is, that at first the timothy, being most rapid in growth, is the prevailing crop; in the second year, the two crops are about equally balanced; but in the third year, the herds-grass greatly prevails. Until I saw the analysis alluded to above, I was in the habit of considering herds-grass as valuable or even more so than timothy. You may imagine my surprise, then, when I saw my favorite placed *seventh* in order. This shows how little dependence is to be placed on mere appearances, and how necessary science is to correct our false impressions.

Another grass, to which Dr. Darlington gives a high rank, placing it third in order, is called the orchard grass. This grass is principally valuable on two accounts. First, it grows well on high and even light lands. I once saw a fine crop of it on a gravelly hill-side, and the proprietor told me that it was ten days in advance of his lucerne, so that it furnished the earliest green food for his cattle. And, second, it is certainly the very best grass to intermix with clover, both coming to maturity and both requiring harvesting about the same time; whereas clover is three or four weeks in advance of timothy or herds-grass.

There is still another grass, which in a treatise of this kind ought not to be entirely overlooked, called the Peruvian or highland meadow oat. It grows to a great height, the seed are very abundant, and the product a very prolific one; but the hay is coarse, and generally not much relished by stock. Of this and a great many other grasses I shall say nothing more, because, although valuable on many accounts, they are so inferior to those enumerated above, that I cannot advise their cultivation. I have now dwelt long, perhaps too long, on the first branch of my subject. I need scarcely inform the reader that I am very much opposed to long speeches or long sermons, and equally opposed to long essays. But really I cannot see any thing in the above which ought to be retrenched. I proceed therefore to consider,

Secondly, The peculiar culture which experience shows is best adapted to success in the grass crop. And here the first thing which claims our attention is the most suitable situation. In general, low and moist lands, such as swamps and marshes, and the sides of streams of water, after being well drained, are selected for timothy, and especially for herds-grass. There is no doubt that, with a favorable season, these crops are very abundant in such situations. But there is another which is still more favorable, and that is, where a stream of water may be conducted along a slope, from which frequent little rills may be drawn off, so as to irrigate the whole. In such a situation we may almost bid defiance to the season. It is a fact, well known to every observer, that these crops grow more in the month of June than in all the year besides. It is also well known, that at the time of heading they require a good deal of rain. If, therefore, June happen to be a dry month, the crop must necessarily be curtailed. Hence the great advantage of irrigation.

But, besides these low situations, I have known heavy crops of these grasses to be taken from high lands. If, in fact, the land be tolerably level, rich, well prepared, abounding so much with clay as to form a loam, I would not hesitate to sow timothy, herds-grass, clover, orchard grass, or the Peruvian oats, any where. I have been cultivating the most of these grasses for the last fourteen years. I have had them in every variety of situation, and, with the exception of one year only, I have never failed in having a tolerable crop.

The next thing to be considered is the necessary preparation of the land. And here (if I may be allowed the expression) no crop so peremptorily insists on good treatment as the grass crop. Without good land and good preparation, the labor, and time, and seed are all thrown away. With good management the reward is liberal; but without it there is no reward, but in lieu a positive loss. If therefore the situation be high, and consequently requires no draining, all you have to do is, by frequent ploughings and harrowings, to reduce the land to the finest tilth. Nor let any one feel that he has fully done this, until his whole preparation is made to resemble a square in his garden, well spaded and nicely raked over. If the situation be low, and the water inclined to stagnate, the first and most important thing is to drain it; for of all enemies to the artificial grasses stagnant waters are the most pernicious. In a general treatise, like this, it is impossible to lay down any set of rules that may be appropriate to every particular case. To do this, one must first view the spot and mark its locality. But, as a general rule, there must be an open ditch, proportioned in its depth and width to the quantity of water to be passed off. And although there is great symmetry and beauty in a *straight* ditch, still I would, if necessary, sacrifice these to practical utility. I would therefore conduct the ditch along the *lowest* places, though in doing so it should be somewhat crooked. Into this open and main ditch, all the water should be conducted by drains, or other small ditches, until the whole is drawn off. And here, for reasons which, I take it, are obvious to every one, I would strongly recommend *under-drains*, in all instances where suitable materials can be commanded. I have in my time made many miles of under-drains, but having no stones or other durable materials, in three or four years my drains became stopped up, and therefore useless. At present, therefore, I am compelled to resort to surface draining, a process with which I am by no means pleased; for, besides being a slovenly affair, it is attended with the loss of much valuable land. Draining, however, must be done, and in effecting it every one must be left to his own convenience and taste.

The water being now removed, the next thing is to plough and harrow until the whole is thoroughly pulverized. How often these implements ought to be used will depend on circumstances.

Three times I generally find to be sufficient. But in these low situations, I could never yet dispense with *beds*. Water furrows I have found absolulely necessary to collect the water, from which it is drawn off by means of cross drains. We will now suppose that every thing is prepared as stated above, the water drawn off, the land bedded and in fine tilth: the next thing is to sow the seeds. The best time for this, as I think, is from the middle of September to the middle of October. For this purpose a careful hand ought to be employed, who will scatter the seeds evenly and equally over the whole surface, giving to each spot its due proportion. A calm time must therefore be selected, for if there be much wind, many of the seeds will be wafted away, and the evenness of the crop destroyed. I have already stated that I prefer a mixture of timothy and herds-grass seed, and I have given the proportions. Of this mixture, I consider a half bushel as sufficient on good and well-prepared land, and if the land is not good and well-prepared, even twenty bushels nor any other quantity is enough. And whilst upon the subject of sowing, allow me to say, that two quarts of clover seed, or a bushel of orchard grass or Peruvian oat, is about the proper quantity to the acre. I take it for granted, that no one will understand me as advising to sow *clover* in the fall. These seeds are usually sown with small grain, with wheat or rye in February, or with oats in early spring. The seeds being now sown, other important parts of the work remain to be done. The first is to pass a heavy roller over the whole, then to clean out the water furrows and the drains, and lastly, if possible, to give your meadow a top-dressing of good manure.

But some one will say, if I am to have all this trouble and expense, then the hay crop will be like the Indian's gun, "cost more than it comes to." But let us try this a little. I think the hay crop the very cheapest we can raise. The outlay, I acknowledge, is very heavy; but it ought to be recollected that we are laying the foundation not for *one* crop only, but for at least three, and sometimes as many as six. But we will content ourselves with the lowest number. Now to procure these three crops, we plough and harrow three times, and we roll and manure once. But in getting three crops of wheat, how often do we have to plough and harrow? At least *six* times, and each crop ought to have its rolling, and would be much better if it had its manuring. Three grass crops, therefore, are produced with one half the labor and with one third the expense in manuring. But let us try it in comparison with the corn crop. And if any one gets a corn crop, including the preparation of the land, with less than four ploughings and two harrowings, besides other work with the hoe and cultivator, then he has a mode of doing business of which I confess myself ignorant. To get three crops of corn, therefore, we must plough *twelve* times, and harrow six times, besides doing other labor. Which, then, is the most laborious crop?

But in a discussion of this kind, other things are involved besides the actual amount of labor; for if the increased labor produces a proportionable increase of profit, then things remain just where they were. If I labor more I get more for it; and if I labor less, my profits are proportionably curtailed. Let us test this matter also. An acre of land, such as I have described, will ordinarily produce 3000 lbs. of hay, oftener more than less, but we will fix on that as our standard. An acre in wheat scarcely ever exceeds 20 bushels, generally falls below it; and an acre in corn generally falls short of 8 barrels. But we will fix on these two numbers as the standard. Hay in my neighborhood and in the vicinity of market towns generally is worth $1 per 100 lbs.; wheat in the same circumstances is worth $1 15 per bushel, and corn $3 per barrel. If either be remote from market, the profit is diminished in proportion to the expense of transportation. According to this, the acre in grass, with its three crops, will produce $90; the acre in wheat, with its three crops, will produce $69; and the acre in corn $72. But here is an important fact to take into the estimate, that the $69 for wheat has cost me twice the amount in labor, or the $72 for corn four times the amount of labor, as the $90 for hay did. The result is that less labor has produced the most money. Ought any one then to be alarmed in putting down his lands in grass?

But there is another important item which ought to come into this calculation: which crop, continued for three years, is least injurious to land? Now I will not assume, as many others have done, that the cultivation of the grasses, so far from being injurious, is actually beneficial to the land. I will admit that grass, with every thing else when the product is removed, is an exhauster. But I believe that it has never yet entered into any man's head that grass exhausts as much, or any thing like as much, as corn or wheat. If then grass, with one half or one fourth the labor, will produce much more money, and at the same time exhaust the land much less, then, as an act of sound economy, I must stick to the grass.

But I am tired of writing, and I doubt not the reader is tired also; but I feel that this treatise would be unpardonably incomplete were I to say nothing as to the proper time and mode of harvesting the grass crop. This is a matter of much more importance than farmers are generally aware of; for on it depends the flavor, the nutriment, and therefore the whole value of the crop. And here I shall perhaps advance some things which may be controverted by others. My observation may come in conflict with theirs. But all I have to ask is, "give me a fair trial before you hang me." I say then, in general, that our grasses are allowed to stand too long in the field before they are cut, and that they are allowed to remain there too long before they are carried to the mow. The proper time to mow the clover is when the blossoms *begin* to change from the red to the brown state. The stems and leaves have then come to full maturity, containing all their sugary and other nutritious properties, and the after process is merely employed in ripening the seed. Unless harvested now, the stems lose their juices and become hard, and the probability is, that in curing, most of the blossoms and many of the leaves will drop off, and instead of that sweet, fragrant substance, which alone deserves the name of clover hay, you will have only a parcel of dry, black sticks. The other grasses ought all to be mowed as soon as they have dropped their bloom. Indeed, when the crop is a large one,

a beginning ought to be made whilst they are yet in bloom; for, unless the force is a large one, and the season favorable, some will be advanced too far before it falls under the scythe.

As a general rule, no grass ought to be mowed whilst it is wet. Even a dew will injure it, and a shower of rain much more; nor ought it, if possible to prevent it, ever to get wet after it is mowed. The best plan is, to stir the grass as little as possible. In good weather, there is no need of disturbing the swaths, but let them lie for a few hours, until the top is wilted, then throw them into the wind-row, taking care in doing so to bring the bottom to the top, and it is surprising how soon the whole mass will be cured. I have several times had grass cut in the morning and before night it was under the shelter. In bad weather, this is a difficult crop to manage. In this event, all that we can do is by shocking to protect it from the wet as far as possible. My rule is to have as little in the field as possible. When therefore we begin the harvest, as soon as any portion is fit to put away, it is immediately deposited under the shelter, and after this we cut only as fast as we can take care of it. If therefore a rainy season should occur, no large amount is in the field, and no great loss can ensue. In good weather the process is a simple and beautiful one. A certain number of hands are employed in mowing. These are followed by another set who wind-row the grass, or pile it up as soon as cured; and these are succeeded by a third set, who carry it to the stack or shelter. Thus the whole process of cutting, curing and storing away, goes on at the same time. But the quantity cut should always be regulated by our means to take care of it.

EXTRACTS FROM THE PROCEEDINGS OF THE WENTHAM (ENG.) FARMERS' CLUB.*

At the following meeting, the subject was, "On the application of nitrate of soda, and its effects as a manure." The member introducing it, related the following experiment he had made as applied to wheat:—

"March the 12th, 1840.—Sowed nitrate of soda at half a cwt. per acre on about half a field—missed two stetches, then sowed the remainder of the field with a cwt. per acre. On the 23d of May, the land sown with the half cwt. only was again sown with half a cwt. per acre more, excepting one stetch, still leaving the two stetches without any; in a few days a great difference was perceptible, both in color and strength of the wheat between the land sown with nitrate and that not sown; and there was also an evident difference in the stetch sown with half a cwt. only, being much paler in color, and not so strong in plant as the land sown with the cwt. per acre—and so continued till harvest. At harvest, measured one-third of an acre from the two stetches left unsown, and the same quantity from two sown stetches adjoining; each crop was harvested and thrashed separately, and the result was, an increase at the rate of five bushels and seven pints of wheat, and two and a half cwt. of straw per acre on the nitrated part above that not nitrated. This experiment was made on light land, a pea stubble mucked for the wheat, which lost the color very much in the dry month of April, and became very weak in plant previous to the nitrate being applied, but improved very rapidly afterwards."

He had also applied it to barley and oats, without receiving much benefit, and is of opinion that applying it to land of a deep staple and already in a good state, likely to be injurious, by producing too luxuriant a growth of straw, and tending to injure the quality of the grain without increasing the quantity. In corroboration of this, another member related an experiment he had made on a good mixed soil for wheat, in which the crop on the land not sown with nitrate exceeded that which was sown by six bushels per acre, the land all treated alike previously; there was also less straw, (a circumstance not easily accounted for) and the wheat not so good in quality on the nitrated part of the field. Several other statements were made, in which its application had been attended with success, on lands varying from a poor light soil to a strong clay; in an experiment on the former description of land, the increase was at the rate of sixteen per cent., and in another, on a clay soil, an increase of about fourteen per cent. was obtained—the straw on the nitrated part was also six inches longer than where not nitrated. Instances of its successful application to clover layers, and also to grass lands were stated; in the latter case, stock were found afterwards to eat down the coarse places where it had been applied. The following resolution was adopted:—

Resolved—"That on lands to which it is applicable, nitrate of soda has the effect of stimulating the plant, by which means more straw and an increased quantity of corn have almost invariably been obtained. From the statements made, the wheat crop appears to derive most benefit; but on rich soils, and those in a high state of cultivation, its application has been found injurious to the quality of the grain, and the quantity not increased. It is therefore the opinion of the meeting that strong clay and light soils are the most adapted for its use." * * * * *

"The proper application of farm-yard manure, with regard to those crops to which it can be most beneficially applied," was the next subject which engaged attention. The member introducing it, after observing the great importance attending a judicious use of animal manures, and that much would at all times depend on the nature of the soil to which it was applied, contended, that on strong and mixed soil lands it was most essential to apply manure extensively for the root and bean crops;

---

* The papers from which the following extracts are made offer an excellent example to all agricultural societies. The report of proceedings is but the substance of *farmers' conversations*. Such verbal discussions, conducted with due preparation and order, by the members of any agricultural society, or farmers' club, and the results reported, would alone serve to change even one of the most useless bodies of the kind to the most interesting and useful. We have often, and in vain, urged the commencement in Virginia of this easy and agreeable plan of collecting and diffusing the opinions and experience of farmers.—Ed. F. R.

and as regards the latter, this system had the effect of benefiting the following crop of wheat on lands of that description. On light soils, it was considered decidedly preferable to be applied immediately to the wheat crop, and only a small portion for roots, as it was believed on such lands a heavy manuring for wheat was in some measure beneficial to the succeeding crop of turnips.

Manuring young layers* was often hazardous, and not recommended as a system desirable to be adopted to any extent, except on good lands, as when applied on lighter soils it was frequently found to be productive of little or no benefit in a dry summer.

One member who preferred carrying his manure for wheat, considered it desirable to be applied immediately after the hay crop is carted, as manuring thus early tended materially to strengthen the flag, but an objection (of much importance to a flock farm) was raised to this practice, as sheep would not readily eat the herbage afterwards. On this subject the meeting came to the following resolution :—

Resolved—"Although no fixed plan can be laid down as to which are the most suitable crops for applying farm-yard manure, a great deal always depending on seasons and the nature of the soil; but from the remarks made, however, the meeting is of opinion that on good mixed soil and heavy lands it is highly desirable to manure well for the root and bean crops; but that on lighter soils, and where it is not considered right to manure extensively for roots, most benefit will arise by applying it immediately to the wheat crop rather than to maiden layers, which latter system the meeting does not consider it desirable to adopt, except on lands of good quality and kind for clover."† * * * *

The following meeting was engaged in a discussion on "subsoil ploughing with regard to its utility and practical effects." This subject, as recommended in the report of the preceding year, now came under the notice of the club, for reconsideration. The member who brought it forward observed, that the opinion he entertained at the former discussion of the question was not confirmed by the practical results he had witnessed during the eighteen months which had elapsed since this subject was before the club, as where he had used the subsoil plough the crops were not improved, neither had the deep-rooted weeds been eradicated as he had anticipated; the only benefit he had derived, was by getting rid of the surface water sooner, from the easier access given it to escape to the drains.

Another member, occupying mixed soil and very light land, had subsoiled his entire farm as it came for fallow, leaving a small portion in each field unsubsoiled, but without perceiving any decided advantage, excepting that where he has subsoiled there is less labor in ploughing than before. Other instances were given, where the subsoil plough had been used, without any beneficial effects be ng perceptible; one case only was mentioned in which it had proved of any advantage; on a piece of pasture land recently brought into cultivation, and previously drained and subsoiled, it had been attended with success, although it was inferred that the draining as well as the subsoiling tended to produce this result. The disappointment of members was general, as it was believed to be of no use where the subsoil is of a sterile nature, but requiring a greater quantity of manure to render it productive, fully proving that on lands where it has answered, a better soil was in some measure brought into action than before. The following resolution was ultimately passed, still leaving the question open for any light which may eventually be thrown upon it.

Resolved—"As far as the experiments have gone in this neighborhood, no pecuniary advantage has resulted from the use of the subsoil plough; at the same time, the meeting does not consider itself possessed of sufficient information to come to a satisfactory decision on the subject."

"The breed of cattle best adapted for grazing purposes," was a subject occupying the attention of the club in September. The member introducing it having had many years' experience in grazing Scotch, Devon, and short-horn bullocks, at one time was in the habit of grazing the former kind, but considers the beasts now obtained from Scotland to be generally of an inferior description; they must also be bought at a higher rate than others. A well-bred Devon is a good beast for grazing, but he prefers the short-horn breed to either of the above kinds, as he has generally found them to make more growth, and also to possess superior fattening properties. The consumption of food by a short-horn was undoubtedly greater than that of a Scot, but the increase obtained in size and weight by the former fully compensated for the extra food consumed. In a trial made by another member between these two breeds, it was ascertained that the short-horns consumed five bushels of turnips per day, and the Scots but three; the short-horns, however, grazed decidedly the fattest, so that there was but little difference in the end. Herefords were noticed as possessing much disposition to fatten, but of these there was not sufficient experience to judge, as they are not much grazed in this neighborhood. The meeting adopted the following resolution :—

---

* Recently sown grass-lands.—Ed. F. R.

† While presenting this opinion of practical farmers, we must protest against its soundness, at least for this country. Experience and observation have concurred with reasoning to convince us that it is better to apply manure as top-dressing to grass (clover) than to grain crops, and the more so as it is the less rotted or reduced. And though knowing but little of root culture, we should deem it far better to give to roots, and all succulent crops, manure in proper condition for their use, than the same to the grain crops; the latter kind being, in general, the last on the farm to which we would advise the applying the farm-yard manure, if the application to grass and to roots, vines or pea crops, were as convenient. Manure increases the stalk and leaf, and the tuberous roots of plants more than their seeds; and therefore should be given especially to those crops of which it is desired to increase the general bulk, and not to those of which the seeds alone are the important or sole object of product.—Ed. F. R.

Resolved—"That the short-horn breed of cattle is the most approved for grazing purposes, from the circumstances of their making more growth, and also possessing greater fattening properties than the other kinds; and although found to consume more food, this has generally been compensated for by their fattening in a shorter period."

The following meeting was engaged in a discussion on "The breed of sheep best adapted to this district, combining weight and quality of fleece with aptitude to fatten." The member bringing this subject before the club contended that, for all purposes, the pure Southdown breed was in every respect to be preferred. As regards a cross, that between the Down and Leicester was undoubtedly the best, but not equal to the pure breed of the former. The quality of the mutton of Down sheep was superior to that of any other breed (the Norfolk excepted), and generally obtained the highest price in Smithfield market; he believed they would make a better return to the grazier, and instanced a case of Downs and half-bred Leicesters having been bought from the same flock and kept together; the Downs beating the Leicester considerably. He thought there had not been that attention paid to the improvement of the breed of Southdowns which there had been to that of the improved Leicesters. Crosses between the Norfolk and Southdown, and between the Norfolk and Leicester, were also noticed, but not considered equal to the pure Southdown, requiring longer time to fatten, and when fat not so saleable as the latter. The Down wool was equal in quality to any other, and if kept well, will clip nearly as much as a cross-bred sheep.

On the other hand, it was contended that there was no breed of sheep, for grazing purposes, better suited to this district, particularly where early maturity is an object, than the first cross between the Southdown ewe and the Leicester tup, and as both breeds possessed great aptitude to fatten, (the Leicester in the greater degree), the stock obtained from such a cross could not be inferior to either parents. There were some sheep called half-bred Leicesters, but partaking of several crosses, whose fattening properties were greatly inferior to those of the first cross, neither is the mutton so good in quality. It was also argued that Downs require more time, and although it was allowed they possessed more hardihood than half-bred sheep, and can be kept to more advantage in greater quantities, still they would never produce so much weight of wool; and as sheep in this neighborhood are generally returned at from twelve to fifteen months old, and many are often sold in the wool, there were none so suited for these purposes as the latter breed. An animated discussion took place on this subject, occupying this and part of a subsequent evening, which ended in the adoption of the following resolution:—

Resolved—"That for the purposes of a breeding flock, the pure Southdown is the best; and that for grazing and where early maturity is an object, the first cross between the pure Southdown and pure Leicester is the most desirable, as possessing more aptitude to fatten, and producing greater weight of fleece; but where a large quantity are kept and a longer time allowed for fattening, there is no better description of sheep than the pure Southdown." * * *

[*From Isle of Thanet Farmers' Club.*]

A discussion took place respecting turnips, when the general opinion expressed was, "That manuring immediately before the seed is sown, will produce a better crop than dunging the land in the winter; and that drilling Swede turnip seed at ten furrows to the rod, and other turnips at twelve or thirteen furrows, is the preferable method."

The subject for discussion on the 5th of January was, "The best time for cropping the land." There were only seven members present, one of whom stated, "That to his knowledge some barley sown in January, was better when harvested than that sown in March, the same year." Another stated, "That he knew barley sown in February, better than that sown in April." The following resolution was unanimously agreed to:—

"That all spring corn shall be sown as early as possible, provided that the ground is in a proper state to receive it." * * *

At the meeting on the 9th of March, on the subject of "making manure," it was contended by some members, "That it is best to allow the animals that are fatting to go loose in the farmyard." It was also contended, "That it is a good plan to keep a sufficient number of bullocks tied up fatting, and have others loose in the yard, ready to take the place of the fat ones as they go off." The following resolution was agreed to:—

"That it is the opinion of this Club, that to make the most and best manure in the yard, is to feed beasts with Swede turnips and oil cake, with cut hay and straw, about a quarter part of the latter, to exclude as much superfluous water as possible, allowing the animals to run loose."

FACTS ON FOOD AND MANURE.

From Squarey's Treatise on Agricultural Chemistry.

"It has been before stated that every part of a plant contains nitrogen as well as carbon; but, as an invariable rule, the seed of all plants contains a much larger quantity of nitrogen than the leaves and stalks, and a lesser quantity of carbon, and inversely, the leaves and stalks contain a much greater quantity of carbon, and a lesser quantity of nitrogen. Now when a horse is fed on grass, his food consists almost entirely of carbon; and the result is, that when he has a sufficient supply he gets fat—that is, that particles of oily, fatty matter are deposited on the muscles under the skin; but, as it is well known, a horse in this condition is quite unequal to any work, and the least exertion reduces his bulk. But when the same horse, under other circumstances, is fed on corn, his food consists principally of nitrogen; and athough he may, never, under this keep, get as fat as under the other, still the increase he does acquire will be pure muscle, or, as it is technically called, sound flesh; and on this keep he can perform infinitely more work with less fatigue than on food containing no nitrogen.

"A more complete instance could not be ad-

duced to show that animals as well as plants can only assimilate that food which is presented them; in the first case, carbonaceous matters being the food of the horse, carbon is deposited in the shape of fat; in the latter, when more nitrogen enters into the composition of his food, the deposite of muscle preponderates. So it is with wheat. With a manure that only supplies carbonaceous matter, starch is the result. With a manure containing nitrogen, gluten is formed; both cases being completely analogous, and affording unerring proof of one simple and uniform law."

Another example of the singular effects resulting from the use of a chemical manure; not in the common and well known case, resulting from all manures, of an increase in the quantity of the crop, but in the quality. The authority is Professor Daubeny, of Oxford.

"In an analysis of one hundred parts of two different specimens of wheat which were grown on the same field, one of which had been dressed with the nitrate of soda and the other not, the result was—

Wheat on which nitrate was used, gave	
Bran	25
Gluten	23¼
Starch	49½
Albumen	1¼
Extract, loss and water	1
	100
Wheat on which no nitrate was used, gave	
Bran	24
Gluten	19
Starch	55½
Albumen	¾
Extract, loss and water	¾
	100"

Thus it is seen that the wheat so nitrated contains four and a half per cent. more gluten and one half per cent. more albumen than the wheat not nitrated; and as it has been stated that gluten is the substance to which flour owes its nutritious qualities, this alone would prove our position. But if we carry our investigation further, and see its results as to the real produce of bread, we shall be more fully convinced than ever of the utility of this manure. And here again we resort to experiments made by the same distinguished professor, for an elucidation of the fact.

"Three pounds and a half of flour made from wheat dressed with nitrates produced 4 lbs. 14 oz. of bread; whilst three and a half pounds of flour, made from wheat where no nitrate was used, yielded only 4 lbs. 4 oz. of bread; thus leaving 10 ounces of bread in favor of the wheat so nitrated."

THE FARM AND FARMING OF THE REV. J. H. TURNER.—NO. I.

To the Editor of the Farmers' Register.

In the last (February) number of the Farmers' Register, I am personally called on by my highly respected friend, Dr. Dupuy, for a general detail of my mode of farming. This call is also seconded by the worthy editor himself. Being thus publicly and respectfully called on, I do not feel at liberty to refuse. On the other hand, I promptly and cheerfully comply, and, in my turn, I call on the doctor, and hope that you and he will call on other successful farmers to imitate my example.

Indeed, I have long thought that this is one of the very best modes to diffuse practical agricultural information among the people. We now have several very valuable agricultural periodicals circulating in our country; and I have no doubt that the very best expedient for increasing their circulation and usefulness is, for practical farmers generally to do just what I am called on to do at this time. It is true, and I must in justice to myself state the fact, that I do feel a great reluctance in presenting myself in the prominent attitude which I must necessarily assume in such a communication. Were I to consult inclination alone, I would certainly still occupy the same quiet retirement I have hitherto enjoyed. But my friend, the doctor, intimates, very truly, that there is no free-masonry among farmers. If they have any thing that is valuable, whether it be animal, seed, implement, or information, they are very willing to share the benefits of it with their fellow farmers. The only difficulty is to bring them to the pen. They will *talk* by the hour, or even the day, but to *write* is a labor from which they insist to be excused. I, in common with them, have this same feeling; and with me it is so strong, that it requires no little effort to shake it off. But I will try, and if I can be of any service to this good cause, and especially if I can call out the doctor and other judicious farmers in the same way, I shall feel that I have accomplished a great and good work.

With these remarks, I shall at once proceed to the thing in hand. And here I will not, through false modesty, disguise the fact that I have been successful in farming. This success, under GOD, I mainly ascribe to two things. The first is, that from the beginning, I endeavored carefully to avoid the faults, or mistakes, if you please, into which I clearly saw that many others had fallen. And the second is, that I was careful to avail myself of all the local advantages which my peculiar situation afforded.

Under the first head I will mention, as a palpable fault, I may even call it the crying and ruinous sin of farming, the great, the excessive quantities of land that many are anxious to encumber themselves with. I call all that land *excessive*, and even worse than useless, which the owner cannot turn to a profitable account. When, therefore, a man has as much land as he can cultivate well, furnishing as many shifts as an improving mode of farming requires, and besides this, as much in woods as will supply materials for his enclosures and fuel, all besides is a mere expense without any profit. I could now, did it not seem invidious, point to many splendid estates, which are so far from paying a fair profit, do not yield three per cent. on the original cost and fixtures; nay, some, I verily believe, bring the proprietors in debt every year. And what can be the reason of this? It is not because there is not space enough to operate on, it is not because the lands are so poor as to be absolutely unproductive, nor is it because there is not sufficient force to cultivate them; but it is simply because there is more capital involved than can be turned to a profitable account. I mean that the land, the labor, the stock, or if a the necessary the same, and

sary fixtures have altogether amounted to a sum on which the products can pay nothing. This, therefore, must necessarily be a losing concern.

Besides, these overgrown estates require every thing on a corresponding scale. The house, the stables, the garden, the pleasure grounds, the dinings must all be large. But these large things cannot be called into existence for nothing; nor can they be continued for nothing. Large establishments always demand large expenditures. Whilst therefore the income is large, the outgo is still larger. And hence it is that these great estates have often changed hands in less than three generations.

Another great error into which many farmers fall is, that they undertake more than they can accomplish. They plant more than they can cultivate. The consequence is, that the ground being badly prepared, and the culture defective, the crop must necessarily be a poor one. I have no doubt that the same manure and less than half the labor, expended on a few acres, would often produce more than the whole farm, cultivated as it now is.

Connected with this I will mention, that many farmers keep more servants and more stock than they can employ in a profitable way. The master must have his body servant to brush his coat, and his groom to saddle his horse; and the mistress must have her maid to do up her caps, and her house-keeper to carry her keys; and then, jointly, they must have their carriage-driver, and footman, and butler, and dining-room servant, and nurse for every child, and laundresses, and meat-cooks, and pastry cooks, and scullions, and head gardener, and under gardener, and I know not how many domestics besides, and all these with one or more apprentices under them. Then there must be the saddle horses, and carriage horses, and the bob-tail ponies for young master and young mistress to ride. Now all this looks very well on paper; but the question is, who can support it? Or if things do not proceed to the extreme stated above, it is a well-known fact, that farmers do generally keep more servants, and more horses, and more dogs, and other mere matters of pleasure, than they have any use for.

Now I had observed these and other kindred faults, and, when I became a farmer, I determined to avoid them; and reared as I was to habits of labor and economy, I found no great difficulty in doing so. My first purchase was therefore a very small one. I bought just so much land as I thought, with my means, I could bring speedily into profitable cultivation. The capital so far invested was a small one; nor did it require any great outlay in ditching, inclosing, manuring, labor, and every thing else necessary to use. I however made a great many mistakes, which subsequent experience enabled me to correct. One I will mention. In preparing for my little corn crop, I applied my manure in the drill, and not broadcast. This will do where the crop is corn, and corn alone, but will not do when it is to be followed by subsequent crops. I saw my mistake, and never afterwards repeated it. This plan of spreading a little manure or a little lime over a large surface cannot be too strongly reprehended. It is mere waste; whereas, if it be confined to proper limits, we at once derive the benefits of it.

I ought to mention, that at the time alluded to above, I was engaged in other business in town. This I regarded as my main pursuit, whilst the farm was resorted to for amusement. I had fancied to myself, that after spending a sultry day in town, it would be very pleasant to resort to my country establishment in the afternoon, and there regale my senses with the beautiful fields and fragrant flowers. But I soon found that a farm, even a *small* one, will not suffer itself to be treated as a *plaything*. Do what you will, it will maintain its solid importance—*it will fill your pocket or empty it.*

I must also mention, that the interest which I took in my farm was of a constantly increasing character. In fact, it soon took such a strong hold upon my thoughts and affections, that I was rendered unfit for any other pursuit. The other business, therefore, in which I was engaged, became intolerably irksome. I began it late, and I despatched it as rapidly as possible. I was now engaged in two pursuits, the one was a mere drudgery, the other was my delight. It will create no surprise then when I state, that I soon shook off my town employment, and gave myself wholly to the delights of the farm. Instead of short mornings and afternoons, I now spent whole days in my darling pursuits.

But it would be tedious to detail the various sources of new enjoyment which now presented themselves to me. If I planted a seed, I wished to witness its earliest vegetation; and if I set out a shrub or plant, I wished to inhale the first fragrance of the opening flower. I even thought the shade of my own tree, or the draught of water from my own well, more cooling and refreshing than any other. And I am sure that I never enjoyed the exquisite relish of fruit in all its perfection, until I plucked it from the tree of my own planting.

But before I quit the subject of these pleasure farms, I think it proper to say a little more about them. The impression, I know, is very general among the good citizens of our towns, that such establishments may be resorted to as places of mere pleasure. They figure to themselves a pretty white cottage, with green window shutters, in the very midst of neatness and beauty itself. Here are shrubs, and flowers, and odoriferous plants; and here every thing is beautiful and sweet and fragrant. Then this earthly paradise is so located, that a ride or walk of an hour will carry the fortunate proprietor to his business in town. Oh! how delightful to place wife and children in this beautiful spot during the sultry months of summer? I admit that in one event, and one only, it would be so, and that is where a large property has already been acquired, or where the present business is so lucrative as to sustain the expense. Without this, such a place is a mere moth; it is a constant and rapid drain upon the former or present earnings. It is then the very last thing in which the man of moderate circumstances ought to think of indulging. In fact, I know no instance in which this *double* business has succeeded. One establishment is invariably a drain upon the other.

But whilst I say this, my experience warrants me in adding, that the man of industrious and persevering habits, may so succeed on his small farm, as to justify him in giving up his town business. Accordingly, when I was drawn to the

country, I made farming my only pursuit. In the course of a few years, I cleared the whole of my first purchase, and so enriched it as to make its cultivation profitable. I then bought more land; and as more labor became necessary I added it also, but always in small quantities at any one time, making it my invariable rule to improve as I proceeded. Thus I continued until, before I was aware, I fell into the common error of farmers: I *got too much land*. A considerable portion of my farm may now be fairly called a garden spot. Just that much I consider profitable, and just that much I ought to own, and no more. The residue, which is too poor or too wet to bring a profitable crop, is a mere incumbrance to my little estate, and I should be better off without it.

Having now detailed certain great evils which I endeavored to avoid—all of which may be summed up in one word—*excess of capital*—I will now advert to certain other things which I thought it of equal importance to *practise*. In this view I would present, as claiming the very first rank, what I would call a system of judicious economy. And here I wish it to be distinctly understood, that by this term I do not mean a niggardly spirit, nor a stinting in any form whatever. I mean that, whilst every body and every thing has a sufficiency, there be nothing wasted. This system I have earnestly endeavored to establish on my farm. In this, I have had to row against wind and tide. There seems to be in the negro an innate propensity to profusion; we see it displayed in his food, in his clothes, and even in the comforts which are exclusively his own, and in all the departments which come under his direction. This propensity, I believe, can never be effectually counteracted; but the injury resulting from it may be in some measure obviated, by the constant vigilance of the master.

But the economy which is ordinarily most profitable on a farm, consists not in mere saving, but in lopping off all useless expenditures. It is in vain to save at one point, whilst a greater loss is sustained at another. I have long been convinced that it is only the speculator or gambler who can make or lose a fortune at a dash. The farmer's wealth never comes to him borne in on the torrent. It is always wafted on the small and gentle rill; and he is the best manager who conducts a great many of these little rills into one general reservoir. The whole machine should therefore be so constructed, and kept in such order, that all the parts may work together. Whilst industry is employed in creating, economy should be equally busy in taking care. In accordance with this, I make it a rule in my little establishment to dispense with every thing that does not in some way or other contribute to our immediate comfort or profit. Every servant and every horse has full employment. I keep no breeding woman nor brood mare. If I want a negro, I buy him already raised to my hand, and if I want a horse or mule I buy him also. Now I will readily admit that it will not do for every body to practise on this Shaker principle; but in my peculiar situation, (of which more hereafter,) I think it cheaper to buy than to raise. At my house, therefore, there are no noisy groups of mischievous young negroes to feed; nor are there any flocks of young horses to maintain.

There is another propensity among our negroes, always annoying, and sometimes attended with considerable loss to the master, and that is a disposition to pilfer. Perhaps there is no farmer, especially among those living near our towns, but is put to more or less inconvenience on this score. In common with others, I have suffered considerably from it, particularly in the loss of my pigs and shoats. It so happened, that if I took a special fancy for any pig, some rogue took an equal fancy for the same; and, somehow or other, he contrived to strengthen his fancy by "the nine points of the law." His fancy thus became stronger than mine, and I was obliged to yield. This inconvenience I resolved to remedy, but the difficulty was to set about it in the right way. After much reflection, I became convinced that my own negroes were the rogues, or that they connived at it in others. The thing could not happen so often without their knowledge or concurrence. Whether, therefore, principals or accessaries, my own negroes were guilty, and the remedy was directed to them. With a view to this, I resolved to take from them all apology for stealing, as far as *necessity* was concerned. I regularly gave to them an ample sufficiency of substantial food—bread without stint, and meat, besides fish, to the amount of four pounds per week. And here let me indulge a passing remark, that of all the hogs I have ever seen, none is to compare to the Berkshire; for besides a fine, round, juicy ham for the master, it furnishes a large fat middling for the negro. And this is precisely the kind of meat which is suited to him. But to return to my expedient. My negroes were also made comfortable as to their clothing and lodging. In addition to these things, which I had reason to believe they would regard as their *rights*, I resolved to allow them other indulgences, which they could but consider as *privileges*. Accordingly, every one is allowed a small piece of good land, which he cultivates as his own. The crop which grows here is the negro's crop, and I exercise no control over it whatever. When the land is broken up for my crop, the negro is allowed time to break up his also; and when my crop is planted or cultivated, his is also; and when mine is gathered, he gathers his, and measures it in my presence, and I commonly become the purchaser. Some persons, I am aware, object to the patching system, alleging that it furnishes facilities for stealing; but managed as above, I cannot think it fairly subject to that objection. On the other hand, good consequences, as I think, result from it. It makes my negro satisfied, and it gives him an interest in his *home* which he cannot otherwise have.

But, besides his patch, I allow to each laboring hand a barrel of corn, or its equivalent in money, and the time of settlement is his great holiday, Christmas. At this time, above all others, our negroes are anxious to have some spending money. Now, by means of this boon, so highly prized by them, I believe that I have succeeded in keeping my negroes perfectly honest for the last four or five years. The practical working of the thing is in this way: if a depredation is committed, *no matter by whom*, my negroes are responsible for it, and double its value is deducted from the Christmas present; or if a tool has been lost, its value is deducted in the same manner. If, however, the thief is given up, and all have an

interest in his detection, the whole responsibility rests on him, and the others are of course exonerated. By this means I also secure my property from the depredations of the neighboring negroes. Thus, a few barrels of corn are made the means of saving my property to perhaps ten times the amount, the whole year; and I am also spared the painful necessity of frequent chastisements. This plan has thus far succeeded so much to my satisfaction, that I determined to state it publicly; and I am very much inclined to the opinion, that were it made general, it would go a great way towards breaking up the whole system of thieving among our servants.

But I have written enough, and perhaps too much, for one paper. From the above it will be seen that, as a foundation for my farming operations, I have endeavored to avoid excessive and injurious outlays in land, negroes, stock, and the other necessary fixtures. The whole may be summed up in this short sentence: The capital involved is as small, as compact, and as available as I could make it. If in the detail I have given to myself a prominency which a becoming modesty would forbid, my plea is, that I have stated the truth, and I could not in candor state less. If this apology is not sufficient, I rely on you, Mr. Editor, and on my good friend, Dr. Dupuy, to supply the deficiency. In my next (for having commenced, I know not when I shall quit,) I propose detailing my plan for enriching my farm.

J. H. TURNER.

ORIGIN OF PAPER MONEY.

From Gouge's Journal of Banking.

It is a fact well worthy of notice, that in all countries into which paper money has been introduced, it has owed its origin, not to the demands of commerce, but to the necessities of the state. The reason for this is, that commerce creates its own medium. In commerce, conducted on legitimate principles, mere *promises to pay* are never substituted for actual payment. The merchant may buy much on trust, but when the day arrives on which he has promised to pay, he will, if solvent and honest, fulfil his engagements.

The necessities of the state, in very ancient times, introduced paper money into China, into Tartary, into India, and into Persia. And in modern, or comparatively modern times, the necessities of the state have introduced paper money into Italy, Spain, Portugal, France, Germany, Russia, Sweden, Denmark, Great Britain, the United States, Brazil, and Buenos Ayres.

There are some who suppose, or seem to suppose, that without paper money there would be little or no commerce. We would call their attention to the fact, that in no one country did the necessities of commerce give rise to the use of paper money. The fact is of importance.

The Bank of England was established on condition of lending *all* its capital to government. The first issue of paper money in this country was made by Massachusetts in 1690, not to serve the purposes of commerce, but to satisfy the demands of some clamorous soldiers. The next was made by South Carolina in 1712, to defray the expenses of an expedition against the Tuscaroras. The first of our regularly constituted paper money banks was the Bank of North America. Private scheming was undoubtedly at the bottom of this, but the schemers owed their success entirely to the hopes they held out of relieving by their new institution the pecuniary wants of government. The like is true of the first Bank of the United States.

Banks have, indeed, been established in different countries, solely to aid the operations of commerce. Of this kind were the banks of Hamburg and Amsterdam. But they were *hard money* banks.

PAPER MONEY REFORM.

From the same.

In no country into which paper money has been introduced has the system been reformed. In all, the enormity has gone on increasing, till it has exploded. It was thus with the paper money of China, thus with that issued by Law in France, thus with the assignats, thus with our provincial paper money, thus with our continental money. And thus, we suppose, it must be with the present paper money systems of Great Britain and the United States.

In Austria, France, Portugal, Sweden, Denmark, and perhaps in other countries, as well as Great Britain and the United States, instances have occurred of banks suspending specie payments and afterwards resuming them. But this is, at best, but a partial reform. Banks in which the copartners are exempted from personal responsibility, are chartered monopolies of the most odious description. And whether such banks pay, or refuse to pay, specie on demand, their paper never can adequately perform the *chief* function of money. It may be very convenient as a *commercial medium;* but as a *measure of value* it is one of the most *deceptive* that can possibly be imagined.

ACCIDENTAL EXPERIMENT. RESULTS OF TOP-DRESSING ON CLOVER.

Extract from the Farmers' Cabinet.

On walking over a clover field which had then been mown the second time for seed, and the crop raked into wind-rows, I observed that a square space, about an acre, was much more thickly set, and the leaves of a more vigorous appearance than any other portion of the field, and seeing that the great thickness of the crop was marked with the exactitude of a line, I pointed it out to my friend from a distance, as the work of a bad mower, who had left a part of the crop on the land, not having cut "the bottom half inch;" but on a closer inspection I could perceive that the line ran *across* the swathes, and not *with* them; so that this could not be the cause of the very great difference in the appearance of the crop, which was found to proceed altogether from a closer plant of much more vigorous growth; on which my friend remarked—"The clover-seed with which this field was sown was saved by myself, was carefully cleaned in the barn, and taken

immediatety from thence and sown in the field; but my seeds-man scattered it too plentifully at first, and the consequence was, the clean seed was all exhausted and the square which you see was left unsown; but not being willing to leave this portion of the field without a crop, and having no seed at hand, I took the clover-chaff from the barn and scattered it very thickly over the unsown portion of land, thinking there might be a few seeds contained amongst it; and you now see the result, after two crops of far heavier bulk have been removed from the spot before us."

THE POTATO.

From the same.

Mr. Editor—It is perhaps not generally known to the subscribers of the Farmers' Cabinet, that in the potato there are two parts, which, if separated and planted at the same time, one will produce tubers fit for the table eight or ten days earlier than the other. This fact has fallen under my own observation, and is the plan I now pursue in order to obtain an early supply for my table, fine and very mealy. The apex or small end of the potato, which is generally full of eyes, is that part which produces the earliest—the middle or body of the potato produces later, and always large ones. The butt or navel end is worthless, except for feeding stock, and if planted produces very indifferent small ones, and often none at all, the eyes, if any, being imperfectly formed. The potato being cut two weeks before planted, and spread on a floor, that the wounds may heal, separating the small end from the middle, then cutting off the navel or butt, the body or middle of the potato is then divided into two pieces lengthwise, taking care to have always the largest and finest selected, being convinced that if none but large potatoes are planted, large ones will be again produced; small things produce small things again, and therefore no small potatoes should be planted; this practice is too prevalent, and may account for the many varieties and small potatoes met with in our markets. Who would not prefer a large mealy potato to a small one, that will take hours to boil soft, and then may only be fit to feed the cattle with?

For several years past I have adopted the plan of putting potatoes into the ground late in the fall, covering them with manure, sometimes with tanners' waste bark, and always have succeeded in raising a fine early crop. Last fall I had taken up some as fine and large Mercer potatoes as any one could wish; they were covered with tan six inches thick the preceding fall; many weighed sixteen ounces. No particular care or attention was bestowed upon them through the summer, the tan not permitting any weeds to trouble them, or to draw out the nourishment from the earth, they had therefore all the benefit of the soil, kept moist and clean by the tan, for tan will keep the ground moist and clean, and in an improved state, in the driest season. I have found the great advantage of it to my asparagus and strawberry beds, which are annually covered with it.

The potato I consider so valuable and indispensable a vegetable, and having never seen a suggestion in print of separating the potato and planting each by itself,* that I have been induced to send you this imperfect and hastily drawn up communication. Perhaps you may think it worthy a place in the Farmers' Cabinet, and if so, should be pleased to hear that some of its patrons will try the experiment of planting separately each part of the tuber, believing that the potato may be much improved by a due regard to the above suggestions. J. F. H.

Lancaster, February 26, 1842.

MAGNESIAN LIME.

From the same.

At page 276 of vol. v. of the Farmers' Cabinet, in a short extract from the "General Report of Scotland," it is stated that "it had been long known to farmers in the neighborhood of Doncaster, England, that lime made from a certain stone, and applied to land, often injured the crops considerably. Mr. Tenant, in making a set of experiments upon this peculiar calcareous substance, found that it contained magnesia, and on mixing some calcined magnesia with soil, in which he sowed different seeds, he found that they either died or vegetated in a very imperfect manner, and the plants were never healthy; and with great justice and ingenuity he referred the bad effects of this peculiar limestone to the magnesian earth it contained. Yet it is advantageously employed in small quantities, seldom more than 25 or 30 bushels per acre."

Mr. Tenant's account of his experiments first appeared, we believe, in the Philosophical Transactions of England, and we know not that it ever appeared in any other form. It is certainly not in very general circulation. We cannot say, therefore, how extensive, varied and accurate the experiments may have been. But it is from such vague, loose and indefinite accounts as the above, that we are called upon to swallow the whole doctrine and all its consequences—head, horns and all, without making a wry face, and that too in opposition to a host of proofs of its utter fallacy, derived from one of the most extensive and decisive experiments ever made in agriculture.

But leaving Mr. Tenant's account of the matter out of view for the present, let us examine that which the advocates of the doctrine it was intended to support have vouchsafed to give us. They tell us that he mixed *some* calcined magnesia with the soil, (but they do not tell us how much,) and found that seeds sown in it either did not come up at all, or if they did, did not grow vigorously. Well, we grant that they did not. What then? Does it necessarily follow that magnesia is destructive to vegetation? Suppose he had mixed pure lime, or even pounded chalk, with his earth, every body knows, or may easily ascertain, that if an undue proportion of either were used, his plants would have withered and died, the same as they did in the magnesian mixture. Would it not then be just as philosophical to assert that lime was in the latter case injurious to vegetation, as that magnesia was in the former?

Here then appears but a single unvaried expe-

* At p. 132 of the Cabinet, vol. v. our correspondent will find this subject particularly treated.—Ed. Cab.

riment, with an attempt to build a very important theory on the narrowest possible foundation of fact. And never has a hastily formed or unsound theory been more signally overthrown by subsequent experience. Instead, therefore, of saying that it was just and ingenuous to refer the injurious effects of the lime in question to magnesia, we should rather say that it was a hasty and unjust conclusion, and would never have been put forth by one acting under correct views of the requirements of the inductive philosophy.

But it is not against the possibility of the injurious nature of the Doncaster limestone, or of the correctness of Mr. Tenant's experiments, for we care not a straw whether they are correct or otherwise; but it is against the broad doctrine of the deleterious nature of magnesian lime in all its forms, attempted to be deduced from them, that we contend. It is against the senseless repetition of this doctrine, unsupported as it is by any subsequent experiments, by every unfledged agricultural essayist, or every enthusiastic builder of plausible theories, that we enter our protest. Agricultural publications are extending in circulation every day, and are beginning to be looked up to as sources of correct information. It is of importance, therefore, that theories diametrically opposed to every day's experience should not be reiterated in them again and again, without attempts being made to show their utter fallacy. Lime, in some parts of our country, is a very costly article for manure, owing to the expense of carriage. A young farmer in one of these has a poor exhausted farm. He sees in the Cabinet and other publications lime highly recommended as a manure, but he also sees essays professedly written by practical men, wherein it is repeatedly set forth that all magnesian lime is deleterious to vegetation, and that each one whose liming has not answered his expectation, refers his disappointment to this cause. He takes up the reports of the different geological surveys lately made in this country, and learns from them, as well as the pages of the Cabinet, that a very large proportion of the limestones of our country are magnesian, and many of them highly so. Would not such a person probably reason thus:—I am very poor as well as my land. This lime is a very expensive thing. I shall probably get of this bad kind, as I am no judge of the article. I shall lay out my last dollar, and probably make my land even worse than it now is. Would he be likely to lime under such views? Would he not more probably toil on from year to year as poor as he began—still afraid to apply the great renovator to his soil? To such, however, we would repeat, what we have already said, that all the benefit which has been derived from lime as a manure, to Pennsylvania and to a great part of New Jersey and Delaware, has been derived from magnesian lime. This is fact and experience; the other is but theory based on a narrow foundation. Then let not this bug-bear of magnesian lime, set up by those who seem to be profoundly ignorant of what is passing around them, deter you from following the bright example set you by the enlightened farmers of south-eastern Pennsylvania. Put on your magnesian lime in such quantities as their experience may have pointed out. Shut your ears against this senseless clamor, and after you have faithfully done your part, trust the rest to the silent, unseen, mysterious operation of those laws which govern the material world, with the full assurance that you will reap a rich reward. S. Lewis.

Dec. 28, 1841.

MAGNESIAN LIME.

From the same.

Mr. Editor,—On reperusing the pages of the back numbers of the Cabinet, a custom to which I confess I am much addicted, I find an article at page 339 of the 5th volume, on "Magnesian lime," which I would wish to notice, for the purpose of drawing from the writer farther information on a topic which still agitates the minds of some of our practical friends, although to him this must appear strange after what he has said to settle the question by a verdict which would seem to admit of no appeal: but as facts are stubborn things, and eye-testimony goes a good way with a class of persons who are accustomed to judge pretty much by the light afforded by that mode of reasoning, I have wrought myself up to the point of encountering from your correspondent a withering glance that may possibly render me incapable from ever looking into the subject again; and yet that would be a pity, for how could such as I come to a knowledge of the truth, if we were to give up one of our seven senses, and consent to be led by the doctors, *seeing*, as we do, that none are more apt to differ than they?

That the presence of magnesia in lime was once believed to be injurious to vegetation, cannot be denied. That it is now by many considered rather advantageous than otherwise that it should contain a certain portion of magnesia, would also appear to be a fact; while others there are who look upon its presence as neither beneficial or hurtful, farther than robbing the lime of just so much *carbonate*—to which state it returns on exposure to the atmosphere—as it is found to contain on analysis. Now which way lies the truth? And after Mr. Kinser has answered this question, I would ask why is it that lime, when quite pure from magnesia, can be applied in almost any quantity to land in almost any state, whether of poverty or fertility, without injury to the crop, while that which contains magnesia, to the amount of about 40 per cent., cannot be used on the same soils and under the same circumstances to a greater extent than, say from 40 to 60 bushels per acre without manifest injury? We are told that in England lime is given with impunity, even to the amount of 500 bushels per acre—what would be the result if such excess were indulged in here with lime containing 40 per cent. of magnesia? It may be said the difference is in the climates of the two countries, but I must be permitted a difference of opinion. In the third volume of the Cabinet, pp. 14, 17, there is recorded a series of experiments, the correctness of which I was informed by the then editor of the Cabinet might be implicitly relied upon, as they had been copied from a diary or journal that had been kept by the writer while in the management of certain estates in Wales, upon which they had been most carefully conducted, for the purpose of ascertaining the value of lime in agriculture,

and where occasions had offered to prove that its application, even to the extent of more than 500 bushels per acre, had been attended with the most beneficial results; but there the limestone—a pure black marble—contained, by analysis, 98 per cent. of carbonate, with not a trace of magnesia. If the readers of the Cabinet, having the 3d volume, would turn to these pages, I think they would be much interested with a perusal of their contents.

At page 275 of the 4th volume of the Cabinet is a letter on this subject from Mr. Mahlon Kirkbride, of Morrisville, Bucks Co., which shows conclusively—at least to me, who saw and examined the land upon which the lime had been used in the way that he states, and found it comparatively barren, the year after the time when he wrote—that the injury had been caused by the lime, which, it is admitted, contained magnesia in its composition. He says, "my father had a field of 25 acres of as good wheat soil as could be found--a deep loam. Its produce for years stood almost unrivalled; he, wishing to make it still better, applied to a part 50 bushels of lime to the acre, to the balance (excepting half an acre) about 65 or 70 bushels to the acre; the result was as follows: in 1837, wheat crop not much more than the seed; 1838, corn, about 10 bushels per acre on the heaviest limed parts, on the other 40 bushels; 1839, oats good where there was the least lime, on the other part 15 to 20 bushels per acre. The half-acre above alluded to received 50 bushels, and the result was, of wheat not a handful; of corn, some stalks three feet high and two bushels of nubbins; of oats a growth of straw 16 inches high, which refused to show any symptoms of ripening, and was cut to get it out of the way." It must be added, the spot on which the lime had been deposited when taken from the canal-boat, and from whence it had all been removed with the most scrupulous care, had not, three years after, produced a single trace of herbage, not even a weed—would Mr. Kirkbride be pleased to inform us of the *present* state of that portion of his land? At page 55 of the 5th volume of the Cabinet, notice is taken of Mr. Kirkbride's communication by a writer who has had great experience in the use of lime, and it is to be regretted that he did not give us the analysis of that which he applied so unsparingly and profitably.

Now I am sure I have no private interests to serve, and no prejudices to support, but I would just ask Mr. Kinser, at the risk of having applied to me the old adage, "a fool can ask more questions in an hour than a wise man could answer in a month," 1st, How is it that when the lime from Messrs. Potts and Dager's quarry, containing 96 per cent. of carbonate, and not a particle of magnesia, is exposed in a heap, and has become perfectly slaked, that white-clover and the finest grasses will be found to penetrate through the lime at the margin of the heap from the depth of perhaps an inch or two, and spread over its surface; and on the removal of the heap, that the herbage will grow on the bald spot and become a rich turf in a short time? 2d, How is it, that the lime burnt from the stone quarried from the south side of the valley at Downingstown shows exactly the same results; while that produced from the stone quarried from the north side of the same valley, perhaps not a quarter of a mile distant, is totally different in its effects, destroying all vegetation, and leaving a galled spot for years where it had been deposited for slaking? for this fact, and a true analysis of these two varieties of limestone, I would appeal to Dr. Sharpless and his brother, who reside on the spot, as also to Mr. Lindley in the immediate neighorhood, asking of the latter gentleman if he has not known oats, sown on a limed soil, to penetrate through a lump of lime several inches in thickness, and grow to the height of about five feet with the greatest luxuriance, *that* lime having been procured from the south side of the valley. The difference between the two stones being peculiar likewise, that from the north side being *heaviest*, but producing the lightest lime—the stone from the south side being lighter, but producing the largest quantity of pure lime; showing that more foreign matter had been thrown off and dissipated during the process of calcination from the stone obtained from the north side of the valley, and proving conclusively, the greater purity of that from the south side. And 3d, I would ask, was it ever known, that herbage would spring up on the margin of a slaked heap of lime containing 40 per cent. of magnesia, even penetrating through it from the depth of an inch or two, and spreading over it, and for the earth to show no sign of its pernicious effects in the shape of a galled spot, after its removal?

The subject is of vast importance, and is the cause of my troubling you with this communication, my object being to "keep the ball in motion," and to elicit the truth. And to this end, I would take the liberty to ask your subscribers, Mr. R. T. Potts, Mr. Dager, and their neighbor, Mr. Henderson, who has, I understand, erected a kiln for the purpose of calcining the cuttings of his pure white marble, whether they have it not in their power to throw some light upon the matter, not doubting that the white marble of Mr. H. contains at least as great a proportion of carbonate of lime as the beautifully mottled variety of Potts and Dager, namely, 96 per cent.

That magnesian lime has proved of very great service when applied to the soil, no one can deny, for the evidence is before our eyes; but I hope that the subject may be investigated to its better understanding, without fear for the result. And I know of no one who has it in his power to do us more service than your correspondent—will he, therefore, take the above remarks into his consideration, and favor us with his conclusions? I am, I must confess, by no means inclined to *blink* the question, lest it should "arrest the march of improvement, and throw cold water on the spirit for liming" which is abroad in the land, but I do wish that your correspondent would inform us of the cause of the very great difference which is seen in the effects between lime containing 96 per cent. of carbonate and no magnesia, and that containing about 50 per cent. of carbonate and 40 per cent. of magnesia. It may be that magnesia operates in a different manner from lime—nay, it might perhaps be found to be more valuable than it for the purposes of agriculture—and to this I have not the slightest objection; that is of no consequence, and need not frighten any one whose sole object is to become acquainted with the true mode of its operation.

P. S.—Since writing the above, the No. of the Cabinet for February has reached me, and I find that your correspondent, Mr. Lewis, of Pottsville, has embraced the opinion that the presence of magnesia in lime is not injurious for agricultural purposes, nay, that it is "diametrically opposed to it;" and to this decision he has been brought, not by a "two-penny experiment made in a garden-pot, or the corner of a field," but by its extended use over hundreds of thousands of acres through a long period of years, in opposition to the "would-be oracles of the day," or the theory that has been "babbled," on the subject. Now, by such men as your correspondents, Messrs. Kinser and Lewis, I presume we shall be sure that the subject will be properly treated, and the truth elucidated, but I would meekly ask why do these gentlemen use such strong language to express themselves, if they are not in some way interested in the matter? Surely it does not require such terms of contempt and reproach to silence the workers in a garden-pot or the corner of a field, or these very small oracles or babblers who presume to arise in their path? S.

Luzerne county, February 28, 1842.

REMARKS ON THE OPPOSITE OPINIONS OF MAGNESIAN LIME.

In the Farmers' Cabinet there has been recently revived, and is warmly contested, the old controversy as to the alleged deleterious action of magnesia in lime. Two of the articles are inserted above, which set forth the opposing views. This still doubtful question is one of the many subjects of opprobrium to agricultural science—or rather of chemical science pretended to be applied to agriculture. Chemical writers have been content to repeat, and *merely* theoretical farmers to believe, the opinion of Tenant, announced half a century ago; which opinion, however interesting and important to agriculture, and however true might be the particular experiment on which it rested, was certainly not established generally and fully. Other and varied experiments ought to have been made, both by chemists, and by practical farmers who had it in their power to try and compare the effects of lime from both pure and magnesian limestones. But while the various printed articles of argument, or loose discussion, would have filled a volume, there has not been carried through a single series of judiciously planned and accurately conducted experiments, which, if performed, would have decided all doubts, and removed every obstacle to this all-important branch of improvement in a very large agricultural region.

The fact that magnesian lime in large quantities is injurious or even destructive to vegetation and to productiveness of soil, however certain, is by no means a proof that the application of magnesia (either in its calcined and pure state, or when carbonated and mild,) is hurtful. There are other manures (indeed most others) highly beneficial in proper quantities, which are injurious in excessive quantities. Pure lime itself is adduced by the witnesses on one side to show that it may be applied in any quantity without damage to vegetation, and that benefit is found by increasing the dose to 500 or even 1000 bushels, in the caustic state, at one application. Yet, without undertaking to deny these particular facts, (as we know nothing of the precise conditions of the trials,) it is certain that our liming farmers in lower Virginia find 150 bushels dangerous, and 100 bushels or even less often unsafe. Yet no farmers in our region have made more profitable improvements, except the marlers, than those who have used lime. The kind most generally used by them, and from which all their facts of injury by excess have been derived, is oyster-shell lime, which is pure lime, containing no magnesia or other foreign matter.

Of shell marl, or merely calcareous marl, the principal and almost sole fertilizing ingredient is mild lime or *carbonate* of lime; and when we first commenced its use, we had no idea that any quantity of it could injure land by its excess. Yet a few years' experience showed great injury from applications containing not more than 200 and sometimes less than 150 bushels of the proportion of this mild lime. The richer the marl of course the greater the injury from a heavy dressing. Yet what farmer of common sense would therefore denounce the use of marl as injurious, or would prefer the poor to the rich, because 500 bushels of the poor produced great and continued increased product, while 500 of the rich would produce disease and great injury to the grain crops, for many years?

Theorists have extended the sound objections to caustic magnesia being applied too heavily as manure in newly burnt lime, to the existence of carbonate of magnesia naturally in soils, or in manures; and have inferred that, even in this mild or natural form, it was the cause of sterility. We have no practical knowledge of magnesian soils; but cannot believe that a substance so similar to lime in its chemical qualities can be so different in its operation as manure. Soils may indeed be barren from an excess of magnesia in their natural composition (if there be any such) as others certainly are because of excess of lime; and others by excess of the siliceous and others of the clayey ingredient. But any quantity of magnesia that could possibly be applied as manure,

after it had become carbonated and mild, we cannot believe to be otherwise than an aid to fertility. The bottom lands of the Red river, in Louisiana, have two or three per cent. of carbonate of magnesia, (according to the analysis of a specimen which we examined,) and other celebrated fertile soils also have this earth as an ingredient.

Ed. F. R.

SUGAR BEET.

From the Farmers' Cabinet.

Mr. Editor—I find that the Massachusetts Agricultural Society has awarded a premium of $15 to F. Tudor, of Nahant, for a crop of sugar beets measuring 1300 bushels per acre. Mr. Tudor's account of the *management* of the crop—a statement which should, I think, always be made to accompany a premium crop—was as follows. "The ground was old pasture of indifferent soil and very stony; it was broken up in 1840 by trenching, 20 inches deep, which brought much poor soil to the surface. The stones were gathered from the land and buried in the bottom of the trench, upon which was spread three inches deep of mussel-mud, then the turf and the best of the soil, then two inches of rock-weed fresh from the shore, or cut from the rocks; then the less rich part of the soil and more mussel-mud, the top being left with the poorest and most gravelly soil. In the spring of 1840 it was sown with sugar-beet, but the crop was poor. In 1841 the land was ploughed six inches deep without reaching any of the rich soil below, the surface still exhibiting little but yellow loam and gravel. Upon this I caused sugar-beets again to be sown, and when the plants had sprung up, I had the land *dressed on the surface*—merely spreading on 15 cords of rich cow-yard manure. This caused the young plants to shoot and grow away most vigorously, and the crop has been so large that I have determined to exhibit it before the State Agricultural Society, and put in a claim for premium. No particular care has been taken of the crop, for although the seed had missed on several patches, they were not filled with plants, while during the drought of August, many of the tops were cut as fodder for cows; but for this, I believe the crop would have produced 1600 bushels per acre. The crop was sold by auction, and the weight given was what the purchasers paid for. The largest root measured 34 inches in circumference, and weighed 31 pounds, but it was hollow; the largest sound and perfect root weighed 21 pounds; a fair bushel weighing 60 pounds. I think the large crop which has been produced on my land was not caused by the trenching, but *by the looseness of the soil and the top-dressing of rich manure;* the value of a top-dressing in a season of drought being undoubtedly great."

I conclude with one remark—the above account speaks volumes for the system of subsoiling and top-dressing, a mode of management which seems at length to be commanding the notice of agriculturists generally throughout the land.

J. Grant.

MINUTES OF AGRICULTURAL FACTS.

1. *Green sand and gypsum of James river.*—In the beginning of March we saw for the first time the spot dressed with this manure at Evergreen, which was described at page 645 of vol. ix., and incidentally referred to at page 494, vol. viii. The superiority of fertility of the manured space, as shown both by the remaining stubble of the wheat crop of last year and the young clover, is very manifest, and is fully 50 per cent. over the adjoining ground, though that is very good and productive soil—a fine loam of medium texture, originally rich, and neutral soil, and marled previous to this application, which was made 8 or 10 years ago.

This is a most interesting subject for experiment, and this result is highly encouraging for further experiment and general use by the proprietor. But still there is almost every thing wanting to make this an *accurate* experiment of the effects, and the durability of green-sand *alone* as manure. The deficiencies are, 1st, the small space of the trial, 2d, the want of actual measurement of the quantity of the manure, (which was designed for and supposed to be at the rate of 30 bushels per acre; 3d, that it was on marled land, and no other; and 4th, and the most important objection, that the earth used contained a very considerable proportion of selenite, or gypsum, in very hard though moderately small crystals, which perhaps did not entirely dissolve, for years, and are not yet altogether used up by the crops, and so lost to the land. Thus it is impossible to judge whether the very obvious and profitable results are owing to the green-sand, or to the large quantity of gypsum (of the latter of which there must have been at least 4 bushels per acre) or to both, acting in connexion with the marl before applied. Capt. H. H. Cocke, (U. S. N.) the proprietor, stated that he made this rough experiment in the belief that the *gypsum* and not the *green-sand* was the valuable ingredient of the earth as manure. He also applied some of the same to land *not marled*, and found no benefit. He has since dressed some 30 or 40 acres with the same manure, and as he thinks with good effect; but as no precision was used in leaving a marked or regular boundary line, the effect could not be seen or appreciated at the season when we recently looked at the ground. We hope that Capt. Cocke will commence and carry through accurate and varied experiments, so as to show not only the value of this remarkable body of manure on his land, but also to show which is the fertilizing ingredient, and under what conditions it acts, or fails to act.

2. *Apricot tree in marl.*—At Evergreen, repeated attempts to raise apricot trees near the house had been unsuccessful. The trees died young, after bearing badly. The soil is a rich loam, on a clay subsoil. Some years ago, there was again a young stock of 5 or 6 trees, of suitable size to transplant. For experiment, one of them was transplanted to a walk, made of shell marl, (as a substitute for gravel,) and which was so compact and hard that it required good strength applied to the grubbing hoe to dig the hole in which to set the tree. The hole did not extend deeper than nor beyond the marl, and therefore the roots were placed exclusively in this hard bed of shelly matter. This tree has since been vigorous and grows well, and has begun to bear well. All the other trees, left in good and rich soil, declined, from the attacks of insects apparently, and not one of them is now alive.

The supposed cause of the benefit of the marl is that it cannot be penetrated and made a harboring place for the worm which bores into the tree near the crown of the roots, and the curculio which bores into and destroys the fruit while green. It has been already known in Delaware, (and was published in the Farmers' Register,) that laying about a bushel of marl to the roots and around peach trees, as they stand, (after laying bare the upper part of the upper roots,) was very beneficial to them. But planting them (and all other stone fruit trees) in a bed of marl must be a much better mode, if (as appears from the single fact above cited,) such a soil is not too calcareous for the health of the tree.

For the making of this experiment, as well as for the verbal report of it, we are indebted to Mrs. H. H. Cocke.

3. *Experiments with poudrette.*—Besides the report of Mr. Nicol (at page 97) of the ineffective application of *poudrette* last season, at Sandy Point, similar verbal reports have been made by Messrs. Robert G. Strachan and David Dunlop, of trials on their respective farms near Petersburg. The poudrette used by all was three barrels sent to us as a present, for the purpose of being tried, by the manufacturer, Mr. D. K. Minor, of New York. The supply was received too late for a full trial, as the corn had been generally planted. We made the best disposition of the manure, to three farmers who took pains to make as full trials as the advanced season permitted; and we regret to say that neither of them found any perceptible benefit. Still there can be no doubt of the great richness and value of the raw material from which poudrette is prepared, nor of the prepared article, if the mode of preparation be such as to secure from waste the fertilizing principles. If the fresh human excrements were mixed or covered, with marl, or any mild calcareous earth, we should warrant the preservation of the principles and the value of the manure.—Ed. F. R.

REMARKS ON THE MAKING, PRESERVING AND APPLYING OF MANURES.

To the Editor of the Farmers' Register.

Sandy Point, February 26, 1842.

In the January number of the Register is an "Essay on the making, the preserving, and the applying of manures," on which I would take the liberty of making a few remarks. Passing over the preliminary observations of the writer, I will begin with his stable management. I am not aware that any farmer or owner of a horse, who pays a due regard to his own interest, the health and comfort of his horse, or to the most economical mode of making manure from that source, is in any doubt as to "how long this [stable] litter ought to accumulate before it is removed," and that is that it should be removed every day. The writer of the essay is, however, "of the opinion that it ought to remain until by its great heat it endangers the health of the animal." If stable manure, by its accumulation, and consequent and unavoidable fermentation, should become at all offensive or deleterious to the health of the horses themselves, that deleterious tendency must be in operation from the moment such an accumulation commences; nor can any thing prove more injurious to the health, or more entirely destructive to the comfort of the horse, and certainly none more slovenly on the part of the farmer, than the too frequent habit of many in allowing manure to accumulate in the stable. The essayist's plan of keeping "the stables clean, not by throwing out the old mass, but by putting in frequent supplies of fresh litter," is something like concealing filth by a coat of paint, and has nothing that I know of to recommend it. By the essayist's own admission, the health of the horse is endangered by the practice, and I know from experience that it is not the most economical mode of making manure, and that in scarcely any other position will stable manure become sooner fire-fanged and injured. In Loudon's Encyclopædia of Agriculture is the following remark. "The dung should be removed [from the stable] if possible wholly without the stable as soon as dropped: for the exhalations from that are also ammoniacal, and consequently hurtful. To this cause alone, we may attribute many diseases, particularly the great tendency stable horses have to become affected in the eyes."

The essayist gives the preference to the feeding of cattle in pens, and subsequently states, "here also, great cleanliness ought to be observed, which can easily be secured by frequent supplies of fresh litter." In pen-feeding, with the most ample and frequent supplies of litter, I have never yet been able to secure that amount of cleanliness so desirable to the health and comfort of the animals so fed. Cattle on whom there is no demand made either on their labor or produce,

may thus be kept in tolerable plight; but milch cows and working oxen can never be subjected to this mode of feeding with benefit to themselves or profit to their owners; nor do I think that a larger or equal amount of manure can be made by pen feeding, than can be made by the same number of cattle stall-fed, daily cleaned, and fresh littered. I believe, by the experience of those who have tried both modes, the preference is given, in point of quality if not quantity of manure, to that from stall-fed cattle.

The essayist's mode of feeding hogs is not such as I think would suit the judicious hog breeder. Filthy as the general habits of the hog are supposed to be, it is an animal that is greatly benefited by cleanliness in keeping, and especially in feeding. As a manure raiser, the hog is certainly a valuable animal, and will amply repay his owner for plentiful supplies of litter, and for having his sty or pen frequently cleaned out. The supplying, however, of hog-pens with "scrapings of roads, ditches, &c., or of rich deposites of mud," is, I think, at best of doubtful economy; and in a majority of instances the labor of hauling and depositing such materials in the pens is unnecessary, if not injurious. If the deposites of mud, &c., are rich, why not haul them at once to the fields to be manured? The fermenting of either of them in the hog pens cannot be attended with any benefit, unless they contain a large proportion of inert vegetable matter, approaching to the nature of peat, which in this climate very rarely occurs. In the Farmers' Magazine, vol. xv., p. 351, are the following remarks: "Making composts, then, of rich soil of this description, with dung or lime, mixed or separate, is evidently, to say the least of it, a waste of time and labor. The mixture of earths of this description with dung produces no alteration in the component parts of the earth, where there is no inert vegetable substances to be acted on; and the mixture of earth full of soluble matter with dung and quicklime, in a mass together, has the worst effects, the quicklime decomposing and uniting with the soluble matter of the earth as well as that of the dung; thus rendering both, in every case, less efficient as manures, than if applied separately from the quicklime, and even the quicklime itself inferior as a manure for certain soils, than if it had never been mixed with the dung and earth at all."

The essayist's theory, "that liquids are quite as necessary, and even more so, in exciting and hastening the decomposition of the litter than the solids are," appears to me unqualified. That moisture is necessary to induce fermentation cannot be doubted; but it is equally certain that an excess of moisture is destructive to and affords to the farmer the best means of checking and preventing injurious fermentation.

On the preserving of manures, the essayist observes, "As a general rule, manures ought always to be used, or at least placed in a situation to be used, as soon as thoroughly made;" and subsequently occur the terms, "properly made," "fairly made," "fully made." I would ask the writer, when is manure thoroughly, properly, fairly, fully made? On this point much diversity of opinion prevails. If I, from some experience, might venture to give an opinion, I would say that the slighter the degree of fermentation which takes place before manure is applied, as a general rule, the better. In colder climates, the bringing on of an incipient fermentation in manure before its application to the soil may be a desirable object; but in this climate the difficulty appears to me to be, with the judicious farmer, not in obtaining or facilitating but in preventing fermentation. On this subject, and for the climate of England, Davy speaks as follows:

"A slight incipient fermentation is undoubtedly of use in the dunghill; for by means of it a disposition is brought on in the woody fibre to decay and dissolve, when it is carried to the land, or ploughed into the soil; and woody fibre is always in great excess in the refuse of the farm.

"Too great degree of fermentation is, however, very prejudicial to the composite manure in the dunghill; it is better that there should be no fermentation at all before the manure is used, than that it should be carried too far. This must be obvious from what has been already stated in this lecture. The excess of fermentation tends to the destruction and dissipation of the most useful part of the manure; and the ultimate results of this process are like those of combustion.

"It is a common practice amongst farmers to suffer the farm-yard dung to ferment till the fibrous texture of the vegetable matter is entirely broken down, and till the manure becomes perfectly cold, and so soft as to be easily cut by the spade.

"Independent of the general theoretical views unfavorable to this practice founded upon the nature and composition of vegetable substances, there are many arguments and facts which show that it is prejudicial to the interests of the farmer.

"During the violent fermentation which is necessary for reducing farm-yard manure to the state in which it is called *short muck*, not only a large quantity of fluid, but likewise of gaseous matter, is lost; so much so, that the dung is reduced one-half, or two-thirds in weight; and the principal elastic matter disengaged is carbonic acid, with some ammonia; and both these, if retained by the moisture in the soil, as has been stated before, are capable of becoming a useful nourishment of plants."

The essayist's observation on the best mode of applying manures, "that he has come to the conclusion that the application of rotted manure as a top-dressing, and the coarse and unrotted to be immediately ploughed under," is contrary to the experience and practice of many intelligent and observant farmers. The shortest manures are doubtless the best adapted for winter and spring application, for any hoe crop immediately following. For example, the application of coarse litter, such as straw or corn-stalks only partially decomposed, to a field previous to planting corn, will cause serious impediment in the subsequent culture of the crop, and without any appreciable benefit to this or the following crop. On the other hand, the application of such manure, and also of dry straw, leaves, &c., which have undergone no previous fermentation, as a top-dressing on clover, is attended with the happiest effects, both to the clover and succeeding wheat or corn crop. I have seen finely rotted manure, dry straw from the stack, and dry and recent leaves from the woods, applied to clover side by side, and the best results were from the covering of dry straw. I have also seen young wheat top-dressed with pine

leaves (on marled land) with benefits which, though of course less in degree, were as distinctly marked as I have ever seen from the application of rotted stable or farm-pen manure. Numerous authorities might be quoted in support of using manure as a top-dressing, having undergone little or no fermentation, both from English and American writers. A frequent and valuable contributor to the Register, J. M. Garnett, esq., is one whose opinion must be familiar to every reader of your valuable periodical. A. NICOL.

AN ACT CONCERNING THE BOARD OF AGRICULTURE.

Passed February 3d, 1842.

Be it enacted by the General Assembly, That the members of the Board of Agriculture, authorized by an act entitled "An Act to establish a Board of Agriculture," passed March the twentieth, eighteen hundred and forty-one, be, and they are hereby, allowed the sum of three dollars per day each, for the time they have been, or may be, in actual session, and all reasonable expenses incurred by them, in travelling to, and returning from, their place of meeting.

All charges incurred by the corresponding secretary, postage paid by the members of the board, in discharging the duties imposed upon them, by the act aforesaid, together with the stationary used by the board, shall be allowed, and when admitted by the Governor, shall by him be caused to be paid by warrants on the Treasury.

This act shall be in force from the passing thereof.

[The foregoing act would have been published in the preceding number, but for the disappointment of two efforts, made by letter to different members of the legislature, to procure a copy.

Owing to the like want of authentic information, and relying upon the scant and incorrect notices in newspapers, we were somewhat misled, both as to the features and the progress of the bill, when our remarks thereupon were inserted in the January number. The errors, however, were unimportant, as the act now, such as it is, is completed, and speaks for itself.—ED. F. R.]

REMARKS ON SEEDS AND SEEDSMEN—SOWING SEEDS, CAUSES OF FAILURE, &c.

From the New Genesee Farmer.

The production of living plants from small grains of seed dropped in the earth is one of the most wonderful and beautiful operations of nature. When examined by the light of science, it is found to be effected by the combined agency of earth, air, moisture and heat; and to ensure success it is necessary that these four elements be combined in due but different proportions, according to the nature and habits of the different kinds of seeds. Hence arises the difficulty of causing some kinds to vegetate; and the uncertainty which gardeners generally feel respecting many of their crops until they see the young plants appear. Hence, also, arise most of the complaints which are made to seedsmen, and the censures which are unjustly cast upon them by inexperienced cultivators.

In order to explain this subject, and with a view to lessen the evil, the proprietor of the Rochester seed store has added the testimony of several highly respectable and successful cultivators in the country, and some accounts of their methods of preparing and sowing several of the most important kinds of seeds that are liable to fail with careless management.

The editor of the Albany Cultivator, speaking on this general subject, says:—

"Seeds often fail to grow; and the seedsman is often faulted, for vending bad seeds, when the cause of their not growing is owing to the gardener or planter. To induce germination, moisture, atmospheric air, and a certain temperature, are indispensable; and it is also requisite that light be excluded from the seed, until the nutriment of the seed is exhausted, or until the root can draw nourishment from the soil. The first effect of the air, heat and moisture upon the seed is to change its properties—to convert its starch into sugar—into a sort of milky pulp, the proper food of the embryo plant. If at this stage, the seed becomes dry, its vitality is believed to be destroyed; but if these agents are permitted to use their influence, the contents of the seed swell by degrees, and the first point of the future root having formed, breaks through the shell in a downward direction, and about the same time the first point of the future stem comes forth in an upward direction. Air, heat, and moisture are as indispensable to the growth of the plant, as they are to the germination of the seed.

"Now it often happens, that when seeds are planted in fresh stirred ground, or when the soil is moist, they undergo the incipient progress of fermentation, and the earth not being pressed upon them, and dry weather ensuing, the moisture is abstracted, and the seeds perish. Too much moisture is also often destructive to the vital principle of seeds—and others again are buried too deep to be vivified by solar and atmospheric influence.—The first object in planting, therefore, should be to place the seed just so far under the surface, and so to cover it with earth, as shall barely secure to it a constant supply of moisture. There are many seeds, as of the carrot, parsnip, orchard grass, &c., which if not previously steeped, or the soil well pulverized and pressed upon them, fail to grow for want of moisture. Hence, in sowing orchard grass, it is found prudent to spread it upon a floor and sprinkle it with water, before it is sown, and to pass a roller over the ground after the seed is sown; and hence, in light garden mould, it is advisable to press, with the hoe or spade, the earth upon all light seeds after they are sown."

On sowing flower seeds.

David Thomas, an experienced and very successful florist, remarks:—(N. G. Farmer, vol. 1, p. 56.)

"For large seeds, like the bean or the pea, a coarse soil is well adapted, as they can force their way to the surface from any moderate depth: but small seeds require different treatment; and we

lay it down as a safe rule, the finer the seed, the finer should be the soil.

"How does nature, exemplifying Supreme Wisdom, sow her most delicate seeds? She scatters them on the shady ground, trusting to the rain or the frost to cover them, (of course slightly,) and they germinate before the sun has acquired power enough to scorch them. The dust-like seeds of the orchis and cypripedium sometimes grow in beds of damp moss.

"Common garden loam, whether clayey or sandy, is much improved by a dressing of vegetable earth from the woods, well mixed before planting. If prepared in the preceding autumn, and pulverized by the frost, all the better.

"Such a soil is favorable to seeds of almost any kind, but *essential* to the finer and more delicate sorts. The preparation of the soil alone, however, is not enough. Fine seeds may be smothered if covered from more than one-eighth to half an inch deep; and their short roots may be parched if exposed to the sun except in the morning and evening. To a *fine soil*, therefore, we must add the protection of *shade*, and in time of drought, a regular supply of *moisture*. If the seeds are sown in an open border, a sprinkling of water in the evenings is best, but carefully abstain from applying so much as will bake the ground."

On preparing and sowing onion seed.

W. Risley—(N. G. Farmer, vol. 2, page 38,) says:

"First soak the seeds in water from six to twenty four hours—some seeds being slower to admit moisture than others, is the difference in the time required. After soaking, drain off the water, and mix the seeds with a sufficient quantity of earth to absorb the moisture remaining on the seeds; stir them often that they may vegetate evenly, and keep them in a moderate degree of warmth and moisture until they are sprouted, when they are ready to put into the ground. If the weather should be unfavorable, put the seeds in a cool place, which will check their growth. * *

"It was left in that situation until the time of sowing. In April, as soon as the soil was sufficiently dry, the ploughing wascommenced, and the second day, at night, the sowing was finished, with seed prepared as before stated. *In one week the onions were up*, rows were soon visible near twenty rods, and no weeds yet appeared. The operation of stirring the soil with rakes and hoes was then commenced, and the weeds were not suffered to grow during the summer. (It is a mistaken notion that it is not time to hoe a garden until it is green with weeds.) The first of September the onions were harvested, and the product was over *two thousand bushels* of fine onions from two and a half acres."

On soaking mangel wurtzel seed.

J. Rapaljee says, (N. G. Farmer, vol. 1. p. 149,) "I prepared half an acre of land for mangel wurtzel, and obtained the seed from your agent at Canandaigua. After soaking the seed one day, I commenced sowing; but rain came on, and the soil being rather clayey, it was a whole week before I could sow the remainder. The seed was soaking all this time, and supposing it was spoiled or injured, I sowed it thicker than usual, and had not enough to finish the ground. Accordingly I sent to the same place and got more seed, and sowed the remainder without any soaking; so that part of my ground was sowed with seed soaked one day, another part one week, and a third part not all.

"Now for the result:—The part soaked one week, came up first, and much too thickly;—the part soaked one day, came up slowly and very thinly; while the part not soaked, did not come up at all. Thus showing conclusively, the necessity of thoroughly soaking these seeds, and the little danger there is to be apprehended from soaking too long. I am confident that inattention to this subject is the most frequent cause of the failure of the mangel wurtzel and sugar beet seeds."

William Garbutt, (N. G. Far. vol. 1. 20,) says, "much complaint is sometimes made of mangel wurtzel and sugar beet seed failing to grow. These seeds are not quite as sure of vegetation as some kinds; still, if rightly prepared, and sown when the ground is in good condition, before the weather becomes too dry, they will very seldom fail. The seed should be *soaked* in soft water, standing in a warm place, *for three or four days* before sowing. The shell of the seed is very hard, and requires a long time soaking for it to become softened so that the germ can burst it open. I have sometimes known it fail after being soaked, owing to late sowing and dry weather."

Planting too deeply. In vol. 1, p. 97, W. R. Smith states that he "planted half an acre of mangel wurtzel with two pounds of seed from the Rochester seed store. In a few days some scattering plants made their appearance. * * * Well, nearly two weeks after, I was surprised to find a fair number of plants just peeping through, and from their weak and thin appearance evidently wearied with their journey to the surface, which they never could have reached if the soil had not been light."

Parsnip, carrot, celery and parsley seeds are all slow to vegetate, and if sown late, and dry weather succeeds, they will not often come up. These seeds should be sown early, in fine soil, rolled or pressed down and kept moist. Mr. Geo. Sheffer of Wheatland, raises large quantities of carrots for feeding. He soaks the seed 48 hours, then rolls it in plaster, and when sown covers it from one half to three quarters of an inch deep.—(N. G. Far. vol. 2. p. 181.)

Cucumber, melon and squash seeds, seldom lose their vitality by age or otherwise, but when sown they often fail to grow, owing to the ground being cold or wet. These, and some other seeds, will invariably rot if sown too early—before the ground is sufficiently warm. *Lima bean and sweet corn* often fail from the same causes.

Egg plant seed will not vegetate in the open ground—it requires a good hot-bed.

Locust seed must be thoroughly scalded, by pouring boiling hot water and letting it soak 24 hours.

SUCCESSFUL CULTURE OF SILK IN 1841.

Extract from a letter from Robert Sinclair, sen., near Baltimore.

To the Editor of the Farmers' Register.

* * * I succeeded admirably in raising silk the last season. I sold for cash to the amount of

$357; and I am fixing to raise largely next season, having a good house well fixed, plenty of trees, and 80 ounces of good eggs, hands about me who have now had some experience, and from some account of cost kept last season, I am confident that, after having the three above requisites, I can raise silk in the cocoon state at $1 per bushel, or say what when reeled will make one pound. * * * * * *

ON THE CAUSES OF DETERIORATION OF THE WHEAT CROPS IN VIRGINIA.

For the Farmers' Register.

The causes which have led to the failure of the wheat crops in Virginia, for a succession of years, deserve the deep consideration of every farmer; and I am gratified to perceive that the subject is becoming one of public discussion. It is with the view of contributing my mite towards the elucidation of these causes that I submit the annexed observations; though I have had but little connexion with practical agriculture for several years.

For the last twenty-six years, during which I have been an observer of the progress and maturity of the wheat crop, a very great but gradual change has taken place in the time of ripening. In 1816 and '17 my harvest of the later varieties of wheat, growing on a heavy and rather slow soil, was commenced on the 17th and 18th of June. The earlier varieties, the old purple straw and May wheat, then extensively cultivated, but now extinct, usually came to the scythe from six to ten days sooner. Ten or fifteen years previous to that period, I have heard that the May wheat was frequently harvested in the month from which it derives its name. From 1816 downwards my memorandum book shows that the harvests became later and later; and last year, in the region of country in which I reside, there was scarcely a field of wheat ripe enough to be reaped before the 25th of June, and the harvest extended several days into the month of July. It was perhaps the latest harvest that we have ever known, though there have been several seasons in which a large portion of the wheat has not been in a condition to cut before nearly the close of June.

Another fact, which all farmers have doubtless observed, is that in proportion as the period of harvest is protracted, whether by the season or the variety of wheat cultivated, the more indifferent is the crop. A late crop is almost invariably attacked by the rust, which is decidedly the most formidable enemy we have to contend with. A long series of observations on the weather has convinced me that, from about the 20th of June to the 1st of July, we have a regular accession of hot, sultry weather, accompanied by frequent showers, most disastrous to the wheat that has to ripen during that interval. This state of the atmosphere recurs with as much uniformity as the "long spell in May;" and equally with the latter may be considered as in accordance with the laws which influence our climate. In the one, for the most part, the wheat is in flower; in the other it has to mature. When the harvests were earlier, as they were twenty years ago, the wheat was generally in blossom before the recurrence of the wet season in May, and there was consequently less of scab and blight, and open shuck, than of late years. The organs of fructification had performed their office before they were mutilated by the storms of the season. And in regard to the last half of the month of June, what farmer has not frequently beheld his fields of wheat wither and dry up rather than ripen, beneath the influence of the scorching rays of the sun? Even if it escapes the rust, which it seldom does under such circumstances, the weather is too hot for it to come regularly to maturity; and hence a light product, with very rare exceptions, must be the consequence of a late crop.

The obvious inference to be drawn from these facts is, that farmers should exercise the utmost precaution in the selection and preservation of their seed, and in the cultivation only of the earlier varieties. In the time of flowering they should aim to anticipate the long spell in May; and in the time of maturity, the sultry spell of June. This course, judiciously followed, will go far towards arresting the evil. But it will require care and perseverance. It was formerly practised with great success by the manager at Maiden's Adventure, in Powhatan, who selected every season from the earliest ears in his fields a bushel of wheat; and preserved his May wheat in the highest purity for a long time. His neighbors, for many miles around, were in the habit of sending to him for seed. The English farmers, by similar means, perpetuate the purity of their wheat, and keep each variety entirely distinct. Their example is worthy of all imitation; for as the failure of a crop of wheat in England is attended with far more disastrous consequences than it is in this country, it may be reasonably inferred that they have learned well how to multiply guards for its security.

The means here indicated are within the reach of all; but they do not constitute all that is necessary to the highest state of productiveness of the wheat crop. A great deal depends also upon the *soil;* so much so that the opinion is very generally entertained that wheat soon degenerates in our soil and climate. Hill Carter, in a late communication to the Farmers' Register, directly avows his belief in this doctrine; though William Carmichael appears rather indisposed to subscribe to it.

A highly cultivated plant is like a highly improved animal: neither will bear neglect without manifesting a tendency to deteriorate. Each is in some measure an artificial production. The race horse requires the greatest care, to be maintained in the full possession of his qualities; the short-horn cattle can only thrive on the most abundant and nutritious fare; and in like manner, the plant in its state of amelioration can only be kept up by a supply of that food which is indispensable to its full developement.

In respect to climate, the changes which the seasons have undergone in the last 25 or 50 years must be almost imperceptible. Natural laws are so uniform in their operation that we are hardly justified in supposing that there has been any departure from their ordinary course. If there has been any change, it has been one of amelioration, and therefore propitious to the earlier maturity of plants. But our soils by a long train of cultivation may have become partially or entirely ex-

hausted of that particular aliment which is essential to the production of wheat in its highest degree of purity. If they are thus exhausted, then we can no longer expect to derive perfect crops from imperfect seed. As a general rule, like will produce its like; a robust offspring is not the product of diseased parents. It is well known that it is only on lands containing lime, in some form, that the grain of wheat can attain its perfect developement. If the proper care had been exercised in the selection of seed, and the wheat grown on land adapted to its perfect production, it appears impossible that there could be any degeneracy, or that it should be later in reaching maturity now than formerly. But our soils, instead of being limed, have been enriched by putrescent matter; and in most instances the seed is probably saved from the most luxuriant growth, from rich lots or highly manured fields. The tendency to run to straw is thus encouraged and perpetuated instead of being corrected. Rust, and blight, and smut are the natural consequences of this state of plethora; the time of ripening becomes gradually protracted; and the farmer wonders why his wheat, that looked so promising in the spring, should be such a total failure at harvest.

In the first vol. of the Farmers' Register there is a translation of a highly interesting paper by Professor Bronn, of the University of Liege, "on the influence which the seed exerts on the quantity and quality of the crop produced from it, according to the different nature of the soil and climate from which this seed has been procured." From a number of well-established facts in vegetable physiology, he deduces the following law: "that every thing which favors the disproportioned growth of vegetables, opposes or retards their propagation or formation of fruit; and *vice versa*, the formation of fruit is hastened and forwarded at all times when exterior circumstances prevent the full developement and disproportioned growth of the stalk." The whole paper is of great interest to the agriculturist, and I would suggest its republication at a convenient time.*

This physiological principle furnishes us with the true theory respecting the important subject of a change of seed; and in the absence of a soil adapted to the wants of the wheat plant, as well as the means of rendering it so, our chief reliance will be found in obtaining seed from proper localities. There is scarcely a farmer who does not change his seed wheat, more or less, every year or two. Indeed, his discouragements have been so great, that he is continually on the watch for something new, in the hope that he will at last find a kind of wheat that will flourish on his land. Let him proceed upon correct principles, and there can be no doubt that he will derive material benefit. Supposing his lands to be destitute of calcareous matter, as all our soils are, he should obtain seed from a limestone country. His object is to reduce the quantity of straw, which is already too great on our improved lands, and increase the quantity of grain. A calcareous soil does not yield a great growth of stalk, and the qualities of the plant are transmitted to its offspring for two or three generations. That the qualities are thus transmitted is asserted by Professor Brown, and established by repeated experiments, both in the culture of wheat and other plants.

Some years ago I travelled, during harvest time, through the western part of New York, one of the finest wheat growing regions in the United States. Its soil contains so much calcareous matter that it is frequently found to effervesce when mixed with acids; and accustomed as I had been to witness the growth of wheat on lands made rich by putrescent manure, far more luxuriant than what I saw there, their crops did not present a very imposing aspect. Fields which I was told would yield from 25 to 30 bushels to the acre, would not have been adjudged in Virginia to produce more than 10 or 12 bushels. This is the kind of growth we should endeavor to secure; and next to having calcareous matter in our lands it is most desirable to have seed produced on calcareous soils. From New York then, or from Pennsylvania, or the valley of Virginia, or any other limestone region, we should renew our seed. And the facilities now offered, by the numerous seedsmen in our towns, are so great, as to place it within the power of most farmers to obtain from time to time a few bushels, which is all that is requisite for a supply.

Every farmer has witnessed the eagerness with which new varieties of wheat have been sought after; and he has also experienced the disappointment of finding them to become entirely worthless in the course of a few seasons. I could perhaps enumerate some ten or twelve varieties that have been cultivated within the last twenty-five years. Each was highly extolled, and all produced well for a time. We also know that on some farms, or in some neighborhoods or districts, a variety of wheat continues to be cultivated with success longer than in other neighborhoods. The only reason for this result that I can conceive is, that where a given variety flourishes longest, there the soil is best adapted to its healthy growth. The owners of such lands have it in their power, at a moderate cost, to render them in a great measure exempt from that sterility which, as it regards the production of wheat, has overtaken the most of our soils.

A striking case in point, in support of the view I have attempted to explain, in relation to a change of seed, is offered by the famous Italian spring wheat which attracted so much attention in Virginia a few years ago. For the first season the product was good; in some instances it was even extraordinary. Hence it was inferred that spring wheat might be cultivated permanently in our hot climate. The whole amount of success that attended its culture, as subsequent experience fully demonstrated, was to be ascribed to the quality of the seed, which being obtained from a soil admirably adapted to the perfection of the wheat grain, gave it an ephemeral vitality, during a favorable season, which enabled it to overcome the influence of opposing causes. After the first year, there were few cases in which more than the seed was reaped.

But the most interesting and conclusive facts in support of the value of a judicious change of seed were furnished by the late Benjamin Harrison, in 1838. [See Farmers' Register vol. vi. page 129.] He several times obtained a few

* This request shall be complied with in the next number.—Ed. F. R.

bushels of seed from Frederick county in this state, and the result was uniformly a great yield the first and second years, and a very good yield the third; after which his crops from the same seed rapidly deteriorated. Out of a number of experiments, the only failure he sustained was in the last trial he made; to wit, in 1841. He represented the wheat as ripening very late, and being attacked by the rust. But I have shown that late wheat has no chance to come to perfection, especially during such a season as the last;—the influence of climate being then fully sufficient to counteract the action of other causes, how favorable soever they may be.

I am aware that the editor of the Farmers' Register considered the results of the above mentioned experiments as in conflict with Dr. Bronn's principles. But the application I have attempted to make will, I hope, satisfy him that they are in perfect harmony with them. We assume that the seed was obtained from a soil well adapted to its developement, and transferred to another soil less favorably constituted. And so far as the influence of climate was concerned, the change was likewise to one of a less genial character. It follows then of necessity, that the result could not have been otherwise than comparatively favorable, provided there was no extraneous cause to produce disaster.

It has been thought by many persons that old wheat was better for seed than new. It is a well known fact that many species of plants grow with less vigor from old seeds. The chief value, if value there be, may therefore consist, in the case of wheat, in the diminished tendency to make straw, and in the greater tendency to produce grain. This point can be well observed and the comparative result reported by E. Ruffin, Jr., who has detailed a series of interesting experiments in the last number of the Register, some of which, and this amongst the rest, are yet in progress. It would also be gratifying to many readers to be informed whether the old wheat suffers as much from the depredations of the Hessian fly.

After all, however, the only effectual and permanent remedy for the disasters which have befallen the wheat crop, is to improve the land; to impart to it those constituents of a good soil in which it is obviously deficient. All other means are mere aids and expedients, valuable as far as they go, but of temporary duration. T. S. P.

ON THE CULTIVATION OF THE CORN CROP.

To the Editor of the Farmers' Register.

Chericoke, March 18th, 1842.

When we were last together, you expressed a wish, that I would furnish for publication in the Register, my method of cultivating the corn crop. This, as you wish it, I have no hesitancy in doing, and the more readily, as I consider all tide-water farmers labor under a debt of gratitude to you, for your "Essay on Calcareous Manures," and I may add, for the ardent, and zealous labors of a well spent life, so far as it has gone, in behalf of agriculture, which do all they can, they can never repay. In saying tide-water farmers, I do not at all mean that no other part of the state or country has been benefited by your labors, as I believe all have, or could have been, had they chosen to profit by the precepts you have so long and so ably inculcated, whether it is east, or west, north, or south; for the same great truths and principles that are applicable to our section of country, as to the improvement of soils, under the same circumstances must be applicable to another, and indeed to all; for the first thing, and the greatest desideratum with all intelligent and judicious farmers, I presume must be, if it is possible to make their lands rich, or if rich, to keep them so; for it is only by rich lands that a farmer can make or keep himself rich. The first thing then I should think a judicious man would do, in taking possession of an estate, if it was sterile, would be to inquire into and ascertain the cause of its sterility, and if possible to correct it; and if on the other hand he found his lands already fertile, that very rare occurrence in lower Virginia, it would be equally prudent in him to ascertain its true character, and the way in which this fertility could be maintained. And now (having had a pioneer to go before to point out all these things to us, to enable us to do, what without the aid of science never could have been done, viz.: to make a naturally poor soil rich, and to point out to us, too, that where we most needed the fructifying principle, we had it in most abundance,) I again ask the question, is not he that has done so much for us, deserving of all the praise, and all the gratitude we can give? I trust, sir, you will pardon me for this digression, but it is really what I feel, and what every tide-water man should feel, in lower Virginia or wherever marl or lime is attainable.

I will now, sir, resume the subject for which this communication was intended, to wit, my method of cultivating corn; although I do not know I that I shall advance any thing new, or that any body will fancy my way preferable to his own; as corn making is a subject upon which most farmers think their way is preferable to all others, and I dare say most of us are rather too well satisfied with our own notions, and way of doing things, else perhaps agriculture would go ahead faster than it does, and more science would be brought to its aid. And again the same system of tillage applicable to us, on our light lands, might not be so on different soils. But as I think the method that some of us pursue in this neighborhood a good one, wheresoever applicable, I will even say on. In the first place, then, I delay as long as possible in breaking up my corn land, so as not to finish until the planting season arrives. I am aware that in this practice I am singular, but nevertheless I think it a correct one. One very important reason with me is, that it saves from sprouting a vast quantity of clover seed, that would otherwise be lost; as every one, I presume, has noticed upon early fallowed clover land how thickly the seed came up in the spring, which all of course must be killed in the cultivation of the corn crop. Another reason is that it saves at least one month's work in the after-culture of the crop, as the weeds and grass seed do not find their way up at all, generally speaking; as from the time the ground is ploughed to the laying by of the crop, the drags, cultivators, and ploughs are always going. And thirdly, but not lastly, as I could give other reasons, I think land injured by an exposure to the

winter's frosts and wind. The covering with which nature has clothed it, as a protection from the winter blasts, keeps it, I think, in a better state for the summer's crop, than when it is exposed by a fall fallowing. If the land is stiff, and is ploughed in the fall, it requires another in the spring, and is then almost sure to be ploughed too wet; and I really think it a fallacy, in supposing that decomposition of the vegetable matter turned under in the fall can take place in the spring, before the return of warm weather.

When, however,' my ploughing is done, it is done in the best way, with large ploughs, as I do not design any thing that is turned under shall again see light, until the three-horse ploughs are again brought into operation for a fallow for wheat. The depth of my ploughing is regulated by the depth of soil, as I never designedly turn up a *caput mortuum.*

If the land is any other than very light and dry, we bed in fifteen feet beds, so as to leave three corn rows on a bed. As soon then as the ploughing is finished, we put on the drags, and dress the surface as nicely as possible. The ground is then laid off in five feet rows, with a trowel hoe plough, and the corn planted as soon after as possible; beginning as soon in April as we can. We plant by a string going across the rows, or beds as may be. In common land we plant at the distance of three feet the narrow way, in pretty good land two feet, and in good land three feet with two stalks to each hill. I think it decidedly better to double or triple the stalks in the hill, than crowd it too much the narrow way, as I think corn, as well as all other grain-growing plants, requires air, as much as sun, or rain. As soon as the planting operation is finished, the drags go to work again, so as to get over the crop by the time it begins to come up. As soon as it is up, we put in the single horse cultivators, (five teeth, square cutting edge, and working square to the front, about two or two and a half inches wide, fixed *echelon* fashion in one beam, the horse pulling by the other,) generally I believe called the X cultivator, (the only kind of all the varieties of that plough I have ever seen worth a cent.) Then we run as close to the corn as possible, going three times in a row, generally getting over twice before the corn is high enough to take earth, say knee high, or more. As soon as it is, we put in the single-horse plough, lapping the earth on the corn; we now put on the hoe hands, (having previously thinned as soon as it was large enough to bear the operation,) and that the ploughs may be enabled to keep way for the hoe hands, we now go on with four furrows. The weeding, by the way, is only a nominal thing to level the land, to straighten any stalk of corn the ploughs or other causes may have bent. As soon as we finish with four furrows, we then go back and split open the middles. This brings us to about the beginning of harvest, when the cultivators are again put in, and run to level down the beds, and to keep down the young grass, and to keep the land always open for the reception of light, air, and moisture, the great nourishers of vegetation. We go over the crop with the cultivators after using the plough once or twice before we finish, according to the forwardness of the crop. We cease then until the corn is in full shoot and tassel.

The practice of backing off the land from the young corn, as soon as it comes up, with large or small ploughs, I think cannot be too much deprecated. It is, I know, the prevailing method of cultivating corn in this section of the state; and I know, also, that very many good crops have been made in that way. Corn is a very vigorous plant, and with good cultivation, in good land, work it as you may, will bring a good crop. But still, I think the practice of backing off the land from the young corn a very bad one, as it evidently gives us double the hoe work, exposes the grass seed and roots to the light and air, which vegetates them, and starts them all to growing, and moreover brings up the vegetable matter just turned in, it don't matter whether of fall or spring, then to be exposed to the air to dry, and interfere with the after cultivation the balance of the year, instead of remaining under the earth, to decompose, preserve moisture, and afford food for the growing plant. The great secret, if any there is, in cultivating the corn crop, is always to keep the surface stirred and clean, never suffering a crust to form on the land, that thereby the roots of the plant may have free access to light, and air, and all the moisture it can get, whether from rain or dews, and no weeds or grass to take from the growing crop. To those who use cultivators, in the tillage of the corn crop, I would advise them always to keep ahead of the grass, as, if the grass gets ahead of them, the cultivators will not subdue it.

I have followed the above method of cultivating the corn crop for some years, and have succeeded very well with it, and have never had a grassy field since I commenced it. It saves time, much hoe work, and I think makes the crop more sure. Indeed I do not think it takes more than half the labor of the ordinary method; and to those who sow small grain in the fall after corn it gives a clean cornfield. If, peradventure, this communication should fall under the eye of any other than one of the family of the "good-enoughs" I would advise him to try it, provided always his land, &c., suit.

CORBIN BRAXTON.

PAINTING HOUSES.

From the Farmers' Cabinet.

It has long been a subject of inquiry as to the best time to apply paint to the clapboards of houses for durability. Repeated experiments have been made, within twenty-five years past, which have resulted in the conviction, that paint applied between November and March will stand more than twice as long as that which is spread in the warmest weather. The reason is obvious; for in cold weather the oil and the component parts of the paint form a hard substance on the surface of the clapboard, nearly as hard as glass, and not easily erased or even cut with a sharp knife, and will not soon wear off; whereas paints applied in the months of July and August, and more especially if in a severe drought, the oil immediately penetrates into the wood like water into a sponge, which leaves the lead *nearly dry*, which will soon crumble off.

REMOVAL OF THE OBSTRUCTIONS IN RED RIVER.

To the Editor of the Farmers' Register.

I have this day received from Gen. Williamson, the contractor under the United States for opening the raft on Red river, a letter dated the 19th inst., saying that the obstructions were removed, and that the steamer South Western had on that day passed through on her way to Fulton, a flourishing town some two hundred miles above the raft, and that the Harrisburg steamer, with a barge in tow, was in sight, and would be very soon also through.

It is part of the contract under which the river has been opened, that it shall be kept open for five years, after which time the stream will be so wide as to enable it to pass its floating drift wood, and take the same care of itself as other rivers. At present the river is so lessened in width by accumulations of alluvial soil on the sides, from the lodgment of its drift timber, that it will take the current some time to wash out a space equal to the size of the river either above or below these obstructions; and it is during this time, and for this object, that the contract is continued for some years, so as to assist the current, where it may from time to time show that it is needed, in widening its bed. When this is effected, it is but reasonable to expect that the river will keep itself open within the raft region, as it has always done for 500 miles above it, and as it now does below it. The town of Shreeveport was built some years ago above one hundred miles within the removed raft, and the river has kept itself clear to that place. It is now removed for fifty miles above that place into the unobstructed river, and where it is 200 yards wide, and that for several hundred miles above.

The opening of this great river, which may now be deemed certain, will give an inlet for brisk trade to steam boats, in a passage of five days from New Orleans, into unquestionably one of the finest cotton countries of the United States, whether we regard climate or fertility of soil.

The lands immediately on the river are naturally dry, light, and easy of cultivation, and yield on an average of years from 1500 to 2000 pounds of seed cotton to the acre, and under favorable circumstances on particular acres has yielded more than 3000 pounds, and in corn as high as 75 bushels. In corn it yields from 40 to 60 bushels to the acre. These lands are all owned by purchase from the government, or claimed by settlers with a view to a purchase when they shall be brought into market.

There are large bodies of good oak and hickory upland, running parallel with the river and convenient to it, that can be had at government price, and are now in the market for entry. The produce is various, from 600 to 1200 pounds of seed cotton to the acre, but from 600 to 800 pounds cotton, or 20 bushels of corn, may be about a general average. These lands are easy to clear, and free, light and easy to cultivate, and the country generally well watered and pretty healthy.

This country is worthy a visit from the planter, (which can be comfortably and cheaply made,) as it is perhaps the only part of the United States, taking into consideration price and fertility, that will enable him to make reasonable profits on the present price of cotton, which, it is to be feared, is neither accidental nor temporary.

Mobile, March 12, 1842.

CONTENTS OF THE FARMERS' REGISTER, NO. III. VOL. X.

ORIGINAL COMMUNICATIONS.

	Page
Notes on Sandy Point estate, No. 5,	97
Remarks and inquiries on manures,	100
Rotation of crops,	114
An essay on grass culture,	120
The farm and farming of the Rev. J. H. Turner, No. 1,	127
Remarks on the opposite opinions of magnesian lime,	134
Minutes of agricultural facts,	135
Remarks on the making, preserving and applying of manures,	136
An act concerning the Board of Agriculture,	138
Successful culture of silk in 1841,	139
On the causes of deterioration of wheat in Virginia,	140
On the cultivation of the corn crop,	142
Removal of the obstructions in Red river,	143

SELECTIONS.

	Page
The cut worm,	99
To kill lice on cows, horses or hogs,	100
Of the improvement of races,	101
Clover and timothy—manure,	103
On guano—concluded,	104
The culture of sugar.	106
Proper treatment for cattle newly brought to the south,	108
Facts in hog feeding	108
Sheep-killing dogs,	109
Black the worst color for painting wood work in the open air,	110
Eighth agricultural meeting at the State House,	110
Particular results of farming in Massachusetts,	111
Indian corn for fodder,	113
Habits of the curculio, and means for its destruction,	114
The advantages of the climate of the United States over that of England,	115
Address to the Agricultural Society of Mason, Kanawha and Cabell,	116
List of premiums awarded by the Mason, Cabell and Kanawha Society,	119
Silk culture in East Tennessee,	119
Extracts from the proceedings of the Wentham (Eng.) Farmers' Club,	124
Fact on food and manure,	126
Origin of paper money,	130
Paper money reform,	130
Accidental experiment. Results of top-dressing on clover,	130
The potato,	131
Magnesian lime,	131, 132
Sugar beet,	133
Remarks on seeds and seedsmen. Sowing seeds, causes of failure, &c.	138
Painting houses,	143